



STIC Search Report

EIC 1700

STIC Database Tracking Number: 189786

TO: Ben Sackey
Location: REM 5B31
Art Unit : 1626
May 22, 2006

Case Serial Number: 10/731702

From: Ross Shipe
Location: EIC 1700
REMSSEN 4B31
Phone: 571/272-6018
Ross.Shipe@uspto.gov

Search Notes

Examiner Sackey:

Please review the attached search results.

If you have any questions or if you would like to refine the search query, please feel free to contact me at any time.

Thanks you for using EIC 1700 search services!

Ross Shipe (ASRC)
Technical Information Specialist

ms Fuller

Access DB# 189786

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: BEN SACKETY Examiner #: 73489 Date: 5/8/06
Art Unit: 1622 Phone Number 302-0704 Serial Number: 101731702
Mail Box and Bldg/Room Location: 6m 5 B 31 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

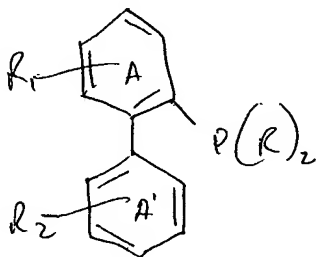
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Ligands for metals & improved metal-catalyzed processes base

Inventors (please provide full names):

Earliest Priority Filing Date:

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.



R is alkyl, cycloalkyl, aryl, heteroaryl, allyl, heteroalkyl, (CH₂)_m-R₈₀, and R₂ represent alkyl, cycloalkyl, heterocycloalkyl etc.

A and A' may or may not be substituted.

marks

STAFF USE ONLY

STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: ROS	NA Sequence (#)	STN
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#) 1	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed: 6/22/06	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 30	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time: 122	Other	Other (specify)

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(FILE 'HOME' ENTERED AT 10:59:14 ON 22 MAY 2006)
L7 STRUCTURE

FILE 'REGISTRY' ENTERED AT 11:38:15 ON 22 MAY 2006
L8 39 SEA SSS SAM L7
L9 6900 SEA SSS FUL L7
SAV L9 SAC702/A

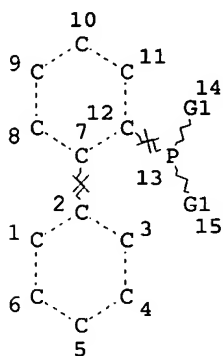
FILE 'HCAPLUS' ENTERED AT 11:48:20 ON 22 MAY 2006
L10 3128 SEA ABB=ON PLU=ON L9
L11 1058 SEA ABB=ON PLU=ON L10 (L) PREP/RL
L12 535 SEA ABB=ON PLU=ON L11 (L) CAT/RL
L13 QUE ABB=ON PLU=ON SYNTHES? OR MAK? OR PREP?
L14 20032 SEA ABB=ON PLU=ON ?PHOSPHINE? (L) LIGAND#
L17 60 SEA ABB=ON PLU=ON L12 (L) L13 (L) L14
L18 41 SEA ABB=ON PLU=ON L17 AND ORGANOMETAL?/SC,SX
L19 26 SEA ABB=ON PLU=ON L18 AND (1840-2003)/PRY,AY,PY
L20 1 SEA ABB=ON PLU=ON L19 AND 2004:722953/AN
L21 675 SEA ABB=ON PLU=ON L11 AND CAT/RL
L22 242 SEA ABB=ON PLU=ON L21 AND L13 (L) L14
L23 41 SEA ABB=ON PLU=ON L21 AND L13 (L) L14 (L) TRANSITION
(L) METAL#
L24 37 SEA ABB=ON PLU=ON L23 AND (1840-2003)/PRY,AY,PY
L25 34 SEA ABB=ON PLU=ON L17 AND (1840-2003)/PRY,AY,PY
L26 62 SEA ABB=ON PLU=ON L19 OR L24 OR L25

=> file reg

FILE 'REGISTRY' ENTERED AT 13:58:11 ON 22 MAY 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
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L7 STR



VAR G1=AK/CY
NODE ATTRIBUTES:
NSPEC IS RC AT 13
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
L9 6900 SEA FILE=REGISTRY SSS FUL L7

L10 3128 SEA FILE=HCAPLUS ABB=ON PLU=ON L9
 L11 1058 SEA FILE=HCAPLUS ABB=ON PLU=ON L10 (L) PREP/RL
 L12 535 SEA FILE=HCAPLUS ABB=ON PLU=ON L11 (L) CAT/RL
 L13 QUE ABB=ON PLU=ON SYNTHES? OR MAK? OR PREP?
 L14 20032 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PHOSPHINE? (L) LIGAND#

 L17 60 SEA FILE=HCAPLUS ABB=ON PLU=ON L12 (L) L13 (L) L14
 L18 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND ORGANOMETAL?/SC,
 SX
 L19 26 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND (1840-2003)/PRY,
 AY,PY
 L21 675 SEA FILE=HCAPLUS ABB=ON PLU=ON L11 AND CAT/RL
 L23 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND L13 (L) L14 (L)
 TRANSITION (L) METAL#
 L24 37 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND (1840-2003)/PRY,
 AY,PY
 L25 34 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND (1840-2003)/PRY,
 AY,PY
 L26 62 SEA FILE=HCAPLUS ABB=ON PLU=ON L19 OR L24 OR L25

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 14:00:00 ON 22 MAY 2006

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=> d l26 1-62 ibib abs hitstr hitind

L26 ANSWER 1 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:493613 HCAPLUS

DOCUMENT NUMBER: 143:26729

TITLE: Process for preparing phosphonium
 tetraarylborate compounds for use together with
 transition metal complex catalysts in
 carbon-carbon bond, carbon-nitrogen bond,
 carbon-oxygen bond formation reactions

INVENTOR(S): Masaoka, Shin; Iwazaki, Hideyuki

PATENT ASSIGNEE(S): Hokko Chemical Industry Co., Ltd., Japan

SOURCE: PCT Int. Appl., 181 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2005051963	A1	20050609	WO 2004-JP17628	20041126

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 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
 MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
 SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
 VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL,
 PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN,

GQ, GW, ML, MR, NE, SN, TD, TG
 PRIORITY APPLN. INFO.:

JP 2003-399650

A

200311
 28

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JP 2003-399651

A

200311
 28

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OTHER SOURCE(S): MARPAT 143:26729

AB The title compds. R1R2R3PH.BAR4 (I) [R1 = primary, secondary, or tertiary alkyl, cycloalkyl; R2 = H, primary, secondary, or tertiary alkyl, etc.; R3 = H, aryl, etc.; Ar = aryl] are prepd. by reaction of R1R2R3P [R1 - R3 = as defined above] with HCl or sulfuric acid, followed by reaction with tetraarylborate M.BAR4 [M = Na, etc.; Ar = aryl]. I can be handled under air. Thus, treatment of a soln. of tri-tert-butylphosphine in heptane with HCl, followed by reaction with a soln. of sodium tetraphenylborate in water, gave tri-tert-butylphosphonium tetraphenylborate (II) in 87 mol% yield. II 0.084 g was weighed under air and was added to a flask contg. palladium(II) chloride 0.014 g, triethylamine 0.0194 g, and THF 5.5 mL; the resulting mixt. was stirred at 21°C for 30 min under argon; 4-bromotoluene 1.368 g was added; and the resulting mixt. was stirred at 21°C for 30 min; 2.2 M soln. of phenylmagnesium chloride in THF 4 mL was added dropwise at 21°C over 10 min; and the resulting mixt. was stirred at 21°C for 2 h to give 4-methylbiphenyl in 87 mol% yield.

IT 853073-55-9P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)

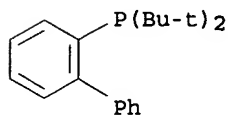
RN 853073-55-9 HCAPLUS

CN Borate(1-), tetraphenyl-, hydrogen, compd. with [1,1'-biphenyl]-2-ylbis(1,1-dimethylethyl)phosphine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 224311-51-7

CMF C20 H27 P

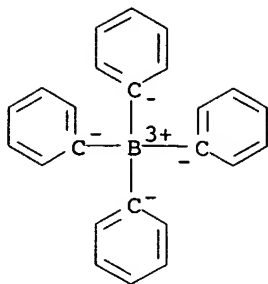


CM 2

CRN 33906-65-9

CMF C24 H20 B . H

CCI CCS



● H⁺

- IC ICM C07F009-54
ICS C07F005-02; C07B037-02; B01J031-24; C07F015-00
- CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 21, 25
- ST phosphonium tetraarylborate **prepn** coupling reaction
transition metal catalyst ligand;
phosphine salt compd reaction tetraarylborate
- IT Coordination compounds
RL: **CAT (Catalyst use); USES (Uses)**
(allyl complexes with transition metals; process for prep. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
RL: **CAT (Catalyst use); USES (Uses)**
(ammonium; process for prep. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
RL: **CAT (Catalyst use); USES (Uses)**
(borates; process for prep. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
RL: **CAT (Catalyst use); USES (Uses)**
(carbonates; process for prep. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Amines, uses
Carbonyl complexes
RL: **CAT (Catalyst use); USES (Uses)**
(complexes with transition metals; process for prep. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal halides
RL: **CAT (Catalyst use); USES (Uses)**
(fluorides; process for prep. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal halides
RL: **CAT (Catalyst use); USES (Uses)**
(iodides; process for prep. phosphonium tetraarylborate compds.

- for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
 RL: CAT (Catalyst use); USES (Uses)
 (nitrates; process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
 RL: CAT (Catalyst use); USES (Uses)
 (nitrites; process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
 RL: CAT (Catalyst use); USES (Uses)
 (potassium; process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal chlorides
 Transition metal oxides
 Transition metal salts
 Transition metals, uses
 RL: CAT (Catalyst use); USES (Uses)
 (process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
 RL: CAT (Catalyst use); USES (Uses)
 (sodium; process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Transition metal salts
 RL: CAT (Catalyst use); USES (Uses)
 (sulfates; process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Cyanides (inorganic), uses
 Hydrides
 Sulfides, uses
 RL: CAT (Catalyst use); USES (Uses)
 (transition metal salts; process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT Fluorides, uses
 RL: CAT (Catalyst use); USES (Uses)
 (transition metal; process for prepg. phosphonium tetraarylborate compds. for use together with transition metal complex catalysts in carbon-carbon bond, carbon-nitrogen bond, carbon-oxygen bond formation reactions)
- IT 64-19-7D, Acetic acid, transition metal salts 74-85-1D, Ethene, complexes with transition metals 75-05-8D, Acetonitrile, complexes with transition metals 76-05-1D, transition metal salts 100-47-0D, Benzonitrile, complexes with transition metals 106-99-0D, Butadiene, complexes with transition metals 107-15-3D, 1,2-Ethanediamine, complexes with transition metals 110-86-1D, Pyridine, complexes with transition metals 123-54-6D, Acetylacetone, transition metal salts 538-58-9D, complexes with transition metals 542-92-7D, 1,3-Cyclopentadiene, complexes with transition metals 603-35-0D, Triphenylphosphine, complexes with

transition metals 629-20-9D, Cyclooctatetraene, complexes with
 transition metals 3375-31-3 7439-89-6, Iron, uses 7439-96-5,
 Manganese, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium,
 uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses
 7440-18-8, Ruthenium, uses 7440-48-4, Cobalt, uses 7647-10-1,
 Palladium(II) chloride 13597-73-4D, Disiloxane, complexes with
 transition metals 29965-97-7D, Cyclooctadiene, complexes with
 transition metals 51364-51-3, Tris(dibenzylideneacetone)dipalladiu
 m 72617-31-3, Butyldicyclohexylphosphine

RL: CAT (Catalyst use); USES (Uses)

(process for prepg. phosphonium tetraarylborate compds. for use
 together with transition metal complex catalysts in carbon-carbon
 bond, carbon-nitrogen bond, carbon-oxygen bond formation
 reactions)

IT 6002-40-0, Di-tert-butylmethylphosphine 32673-25-9,
 Di-tert-butylphenylphosphine

RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or
 reagent); USES (Uses)

(process for prepg. phosphonium tetraarylborate compds. for use
 together with transition metal complex catalysts in carbon-carbon
 bond, carbon-nitrogen bond, carbon-oxygen bond formation
 reactions)

IT 20573-48-2P 131322-08-2P 155234-93-8P 853073-44-6P
 853073-45-7P 853073-46-8P 853073-47-9P 853073-48-0P
 853073-50-4P 853073-51-5P 853073-53-7P 853073-54-8P
 853073-55-9P 853073-56-0P 853073-57-1P 853073-59-3P
 853073-61-7P 853073-62-8P 853073-63-9P 853073-64-0P
 853073-65-1P 853073-66-2P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(process for prepg. phosphonium tetraarylborate compds. for use
 together with transition metal complex catalysts in carbon-carbon
 bond, carbon-nitrogen bond, carbon-oxygen bond formation
 reactions)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L26 ANSWER 2 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:253273 HCAPLUS

DOCUMENT NUMBER: 142:316957

TITLE: Preparation of chiral biphenyl-2,2'-diyl
 diphosphines substituted by alkoxy carbonyl
 groups for use in asymmetric hydrogenation of
 ketones and imines

INVENTOR(S): Artl, Dieter; Meseguer, Benjamin

PATENT ASSIGNEE(S): Bayer Chemicals A.-G., Germany

SOURCE: Eur. Pat. Appl., 20 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1516880	A1	20050323	EP 2004-21174	200409 07

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
 PL, SK, HR

DE 10342672 A1 20050421 DE 2003-10342672

200309

16

JP 2005089462 A2 20050407 JP 2004-267421

200409
14

US 2005085377 A1 20050421 US 2004-940785

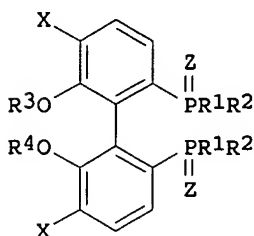
200409
14

PRIORITY APPLN. INFO.:

DE 2003-10342672 A

200309
16

OTHER SOURCE(S): MARPAT 142:316957
GI



AB Chiral (1R)- and (1S)-1,1'-biphenyl-2,2'-bis(phosphines) (I, Z = none, X = H, Cl, Br; R1 = R2 = Ph, cyclohexyl, 3,5-tBu-4-MeOC6H2, 3,5-Me2-4-MeOC6H2, 3,5-tBu2C6H3, 4-FC6H4; R3 = R4 = RO2CCH2, RO2CCHMe, where R = Me, Et; or R3 = cyclohexyl, R4 = RO2CCH2, RO2CCHMe, same R), useful as ligands for asym. hydrogenation of prochiral ketones and imines (no data) and acetoacetate, were prepd. by demethylation of corresponding phosphine oxides I (Z = O; R3 = R4 = Me, same X, R1, R2), followed by etherification of 6,6'-diols with R3Y, preferably cyclohexyl bromide, and RO2CCH2Br or RO2CCHMeBr and redn. by HSiCl3 and used as ligands for asym. hydrogenation of Et acetoacetate and Et chloroacetate. In an example, compd. (S)-I (Z = O, X = Cl, R3 = R4 = H, R1 = R2 = Ph) was prepd. by reaction of the corresponding dimethoxy-deriv. with BBr3, followed by water hydrolysis; the diol was reacted with MeO2CH2Br to give I (Z = O, X = Cl, R3 = R4 = MeO2CCH2, R1 = R2 = Ph), which was reduced by HSiCl3 to give the corresponding diphosphine I (5, Z = none, same X, R1-R4). Asym. hydrogenation of Me acetoacetate in the presence of 0.02 mol% of 5 and 0.01 mol% of RuCl3 in ethanol under 90 atm of H2 for 1 h at 80° gave Me 3-hydroxybutyrate with 97.4 % ee.

IT 848078-18-2P 848078-19-3P 848078-20-6P
848078-21-7P

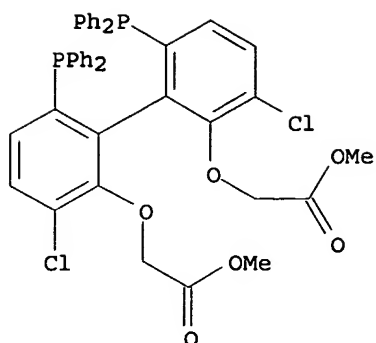
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

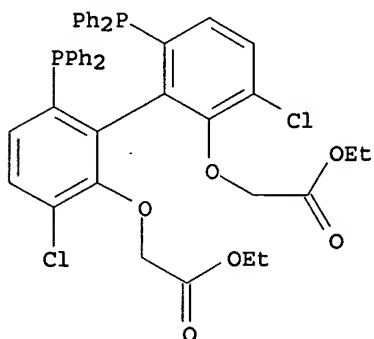
(asym. hydrogenation ligand; prepn. of
axial-chiral biphenyl-2,2'-diphosphines contg.
alkoxycarbonylalkoxy groups as ligands for asym.
hydrogenation of ketones)

RN 848078-18-2 HCAPLUS

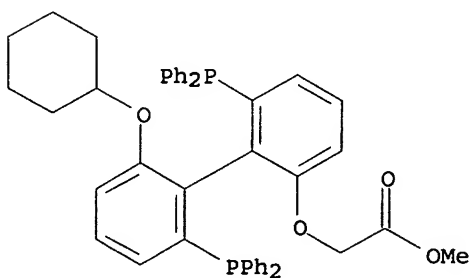
CN Acetic acid, 2,2'-[[(1S)-3,3'-dichloro-6,6'-
bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-,
dimethyl ester (9CI) (CA INDEX NAME)



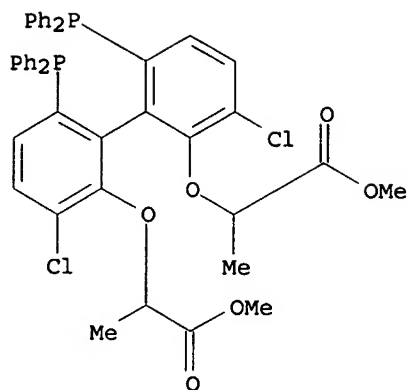
RN 848078-19-3 HCAPLUS
 CN Acetic acid, 2,2'-[[[(1S)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, diethyl ester (9CI) (CA INDEX NAME)



RN 848078-20-6 HCAPLUS
 CN Acetic acid, [[[(1S)-2'-(cyclohexyloxy)-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2-yl]oxy]-, methyl ester (9CI) (CA INDEX NAME)



RN 848078-21-7 HCAPLUS
 CN Propanoic acid, 2,2'-[[[(1S)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM C07F009-50
 ICS C07F009-53; C07F015-00; C07B053-00; B01J031-24; C07M007-00
 CC 29-7 (Organometallic and Organometalloidal
 Compounds)
 Section cross-reference(s): 25
 IT 848078-18-2P 848078-19-3P 848078-20-6P
 848078-21-7P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (asym. hydrogenation ligand; prepn. of
 axial-chiral biphenyl-2,2'-diphosphines contg.
 alkoxycarbonylalkoxy groups as ligands for asym.
 hydrogenation of ketones)
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L26 ANSWER 3 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:235113 HCAPLUS
 DOCUMENT NUMBER: 142:297866
 TITLE: Ruthenium compounds having phosphine ligands and
 diamine ligands, their use as asymmetric
 hydrogenation catalysts, and preparation of
 optically-active alcohols using them
 INVENTOR(S): Ooka, Koji; Inoue, Tsutomu
 PATENT ASSIGNEE(S): Nippon Soda Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005068113	A2	20050317	JP 2003-303471	200308 27

PRIORITY APPLN. INFO.: JP 2003-303471
 200308
 27

OTHER SOURCE(S): MARPAT 142:297866
 AB Ru(X)(Y)(Px)n(A) [X, Y = H, halo, CO2H, OH, C1-20 alkoxy; Px =
 phosphine ligand; A = R1CH(NH2)CH2NR2R3, R1CH(NR2R3)CH2NH2 [R1 =
 (un)substituted C1-20 alkyl, C2-20 alkenyl, C3-8 cycloalkyl, C7-20

aralkyl, aryl, heterocyclyl; R2, R3 = H, (un)substituted C1-20 alkyl, C2-20 alkenyl, C3-8 cycloalkyl, C7-20 aralkyl; R2 and R3 may be bonded together to form a ring; R2 and/or R3 = substituent]], useful as asym. hydrogenation catalysts, are claimed. Also claimed is a method for prepn. of optically-active alcs. by hydrogenation of carbonyl compds. in the presence of the Ru compds. Thus, a mixt. of an isopropanol soln. of KOH, (R)-H2NCHPhCH2NMe2, PhCOMe, and RuCl2[(S)-tolbinap](DMF)_n (tolbinap = 2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl) was autoclaved with 8 atm H2O at room temp. for 1 h to give (S)-PhCHMeOH (91% e.e.) at ≥99% conversion.

IT 847696-13-3P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(Ru compds. having phosphine ligands and diamine ligands and their use as asym. hydrogenation catalysts for prepn. of optically-active alcs. from carbonyl compds.)

RN 847696-13-3 HCAPLUS

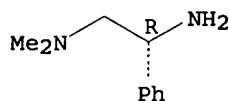
CN Ruthenium, [(1S)-[1,1'-binaphthalene]-2,2'-diylbis[diphenylphosphine-κP]]dichloro-, (SP-4-2)-, compd. with (1R)-N2,N2-dimethyl-1-phenyl-1,2-ethanediamine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 174636-94-3

CMF C10 H16 N2

Absolute stereochemistry.

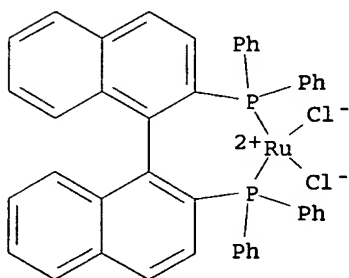


CM 2

CRN 134524-84-8

CMF C44 H32 Cl2 P2 Ru

CCI CCS



IC ICM C07F009-50

ICS B01J031-24; C07C029-145; C07C033-20; C07C033-22; C07C033-30; C07C211-65; C07C231-18; C07C233-73; C07C269-06; C07C271-16; C07B053-00; C07B061-00; C07F015-00; C07M007-00

CC 25-7 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 29, 67

IT 847696-13-3P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(Ru compds. having phosphine ligands and

diamine ligands and their use as asym. hydrogenation catalysts for prepn. of optically-active alcs. from carbonyl compds.)

L26 ANSWER 4 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:158682 HCAPLUS

DOCUMENT NUMBER: 142:272798

TITLE: Preparation of novel transition metal complex and process for producing optically active alcohol with the complex

INVENTOR(S): Mikami, Koichi; Sayo, Noboru

PATENT ASSIGNEE(S): Takasago International Corporation, Japan

SOURCE: PCT Int. Appl., 107 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005016943	A1	20050224	WO 2004-JP11693	20040813

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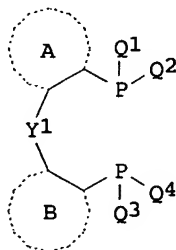
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RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

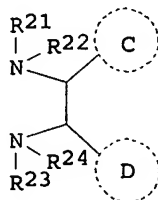
PRIORITY APPLN. INFO.: JP 2003-293145 A 20030813

OTHER SOURCE(S): MARPAT 142:272798
GI

Q=



Q5=



AB There are provided a novel transition metal complex of formula [LMXpZln], preferably a ruthenium-phosphine complex or rhodium-phosphine complex, [L = Q; ring A and B = independently arom. ring; wherein Q1, Q2, Q3, Q4 = independently (un)substituted aryl or alicyclic group; Y1 = a spacer; M = transition metal; X = halo, anion; Z1 = Q5; ring C and D = independently (un)substituted Ph or

alicyclic group; R21, R22, R23, R24 = independently H or alkyl; p = 1,2; n = an integer] which is effectively usable in various asym. syntheses and, in particular, is more effectively usable in the asym. hydrogenation of various ketones; and a novel process for producing an optically active alc. with the complex. These novel transition metal complexes include a ligand obtained by introducing a diarylphosphino group into each of the 2- and 2'-positions of di-Ph ether, benzophenone, benzhydrol, or the like. They preferably further includes an optically active 1,2-diphenylethylenediamine coordinated thereto. The complexes preferably are novel diphosphine -ruthenium-optically active diamine complexes or diphosphine -rhodium-optically active diamine complexes. The process comprises using the complex as an asym. hydrogenation catalyst to conduct the asym. hydrogenation of a ketone compd. to thereby obtain an optically active alc. having a high optical purity in a high yield. Thus, 98.2 mg 2,2'-difluorobenzophenone was dissolve din 6 mL THF, heated to 70°, treated with 2.8 mL potassium diphenylphosphine, and refluxed 2.5 h to give 13% 2,2'-bis(diphenylphosphino)benzophenone which (6.6 mg) was stirred with 3.0 mg benzeneruthenium chloride dimer in 1 mL DMF at 100° for 45 min, followed by distg. away the solvent under reduced pressure to give RuCl₂[2,2'-bis(diphenylphosphino)benzophenone] (I). (1S,2S)-1,2-diphenylethylenediamine [(S,S)-DPEN] (2.6 mg) and 0.8 mL CH₂Cl₂ were added to I obtained above and stirred for 30 min, followed by distg. away the solvent under reduced pressure to give >99% RuCl₂[2,2'-bis(diphenylphosphino)benzophenone][(S,S)-DPEN] (II). I (0.4 mol%), 0.4 mol% (S,S)-DPEN, 402.5 mg 2'-methylacetophenone, 1.3 mg KOH, and 3.3. mL 2-propanol were added to a stainless steel autoclave, and allowed to react at room temp. under H pressure of 0.8 MPa (8 atm) with stirring for 4 h to give >99% (1R)-1-(2-phenyl)ethanol (optical purity 96% ee).

IT 845822-02-8P

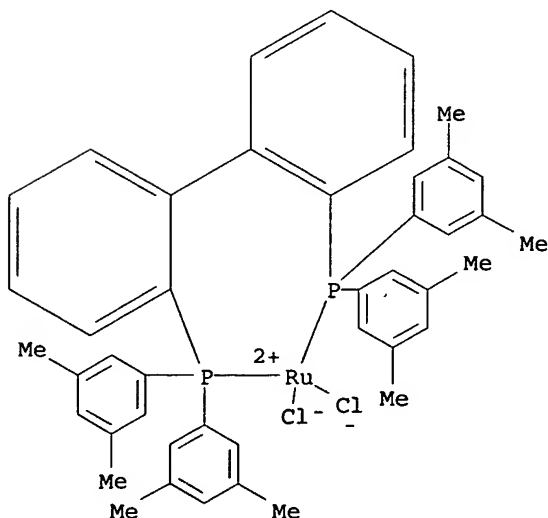
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of transition metal complexes as asym. hydrogenation catalysts for producing optically active alc. by asym. hydrogenation of ketones)

RN 845822-02-8 HCAPLUS

CN Ruthenium, [1,1'-biphenyl]-2,2'-diylbis[bis(3,5-dimethylphenyl)phosphine-κP]dichloro- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
ICS C07B053-00; C07C029-145; C07C033-20; C07C211-27; B01J031-24;
C07F015-00

CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 25

IT 134524-84-8 845910-46-5
RL: CAT (Catalyst use); USES (Uses)
(prepn. of transition metal complexes as asym. hydrogenation
catalysts for producing optically active alc. by asym.
hydrogenation of ketones)

IT 845821-93-4P 845821-97-8P
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic
preparation); PREP (Preparation); RACT (Reactant or reagent); USES
(Uses)
(prepn. of transition metal complexes as asym. hydrogenation
catalysts for producing optically active alc. by asym.
hydrogenation of ketones)

IT 845821-91-2P 845821-94-5P 845822-00-6P 845822-02-8P
845822-04-0P 845822-06-2P
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of transition metal complexes as asym. hydrogenation
catalysts for producing optically active alc. by asym.
hydrogenation of ketones)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L26 ANSWER 5 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:71178 HCAPLUS
DOCUMENT NUMBER: 142:189591
TITLE: Preparation of group VIII
transition metal complexes
with chiral phosphine and chiral
diamine ligands as catalysts for
asymmetric hydrogenation reactions
INVENTOR(S): Hems, William Patrick; Grasa, Gabriela Alexandra
PATENT ASSIGNEE(S): Johnson Matthey PLC, UK
SOURCE: PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005007662	A2	20050127	WO 2004-GB2938	200407 07

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WO 2005007662 A3 20050324

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GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
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VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
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EP 1651657 A2 20060503 EP 2004-743281

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PRIORITY APPLN. INFO.: GB 2003-16439 A

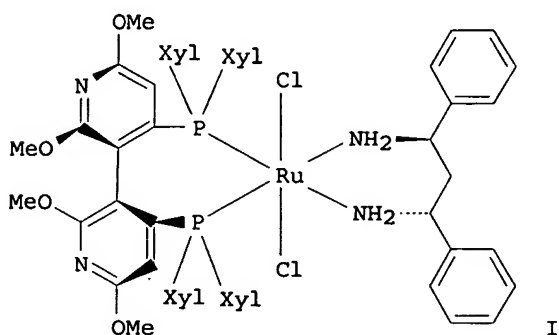
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WO 2004-GB2938 W

200407
07

OTHER SOURCE(S): CASREACT 142:189591; MARPAT 142:189591
GI



AB Catalysts suitable for asym. hydrogenation reactions are described comprising the reaction product of a group VIII transition metal compd. a chiral phosphine and a chiral diamine [R1R2NC(R5)(R6)-A-C(R7)(R8)NR3R4] in which R1, R2, R3 and R4 are independently hydrogen, a satd. or unsatd. alkyl, or cycloalkyl group, an aryl group, a urethane or sulfonyl group and R5, R6, R7 and R8 are independently hydrogen, a satd. or unsatd. alkyl or cycloalkyl group, or an aryl group, and at least one of R1, R2, R3 or R4 is hydrogen and A is a linking group comprising one or two substituted or unsubstituted carbon atoms. Thus, [{(R)XYL-P-Phos}RuCl2{(R,R)-Dppn}] (I) was prepd. and was shown to catalyze the hydrogenation of acetophenone to 1-phenylethanol with 100% conversion and 95% ee.

IT 749217-00-3P 832117-66-5P 832117-81-4P
832117-83-6P 832117-85-8P 832117-86-9P
832747-72-5P 832747-73-6P 832747-75-8P
832747-76-9P 832747-77-0P 832747-78-1P
832747-87-2P 832747-88-3P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

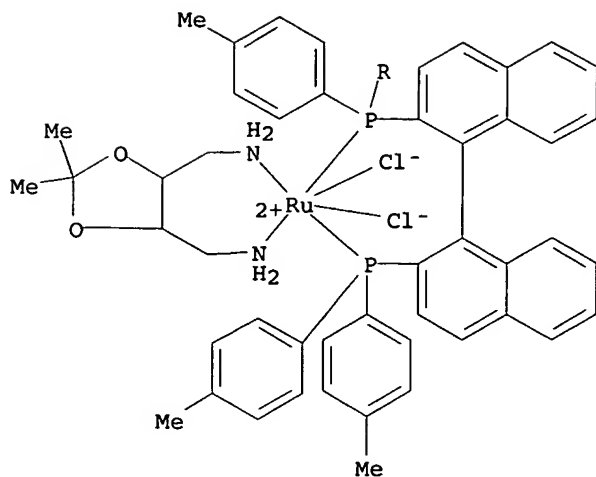
PREP (Preparation); USES (Uses)

(prepn. of group VIII transition
metal complexes with chiral phosphine and
chiral diamine ligands as catalysts for asym.
hydrogenation of ketones)

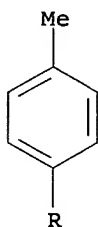
RN 749217-00-3 HCAPLUS

CN Ruthenium, [(1S)-[1,1'-binaphthalene]-2,2'-diylbis[bis(4-methylphenyl)phosphine-κP]]dichloro[(4R,5R)-2,2-dimethyl-1,3-dioxolane-4,5-dimethanamine-κN4,κN5]-, (OC-6-13)- (9CI)
(CA INDEX NAME)

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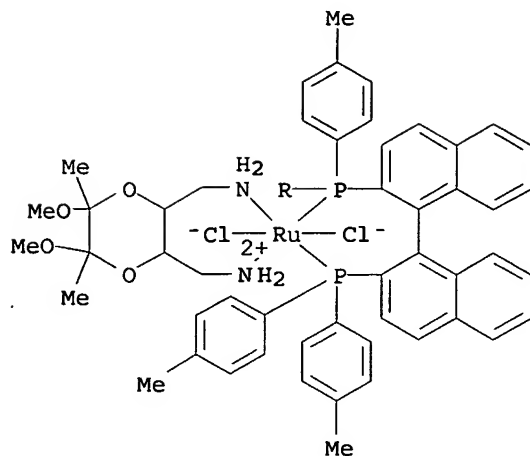


RN 832117-66-5 HCAPLUS
 CN Ruthenium, [(1R)-[1,1'-binaphthalene]-2,2'-diylbis[bis(3,5-dimethylphenyl)phosphine-κP]]dichloro[(1R,3R)-1,3-diphenyl-1,3-propanediamine-κN,κN']-, (OC-6-13)- (9CI) (CA INDEX NAME)

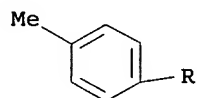
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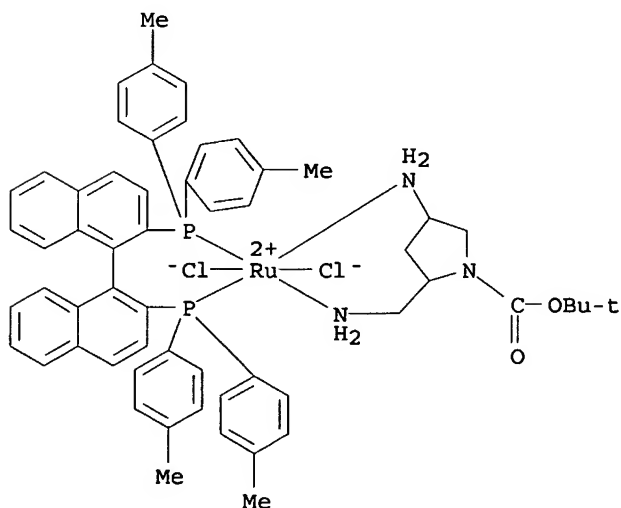
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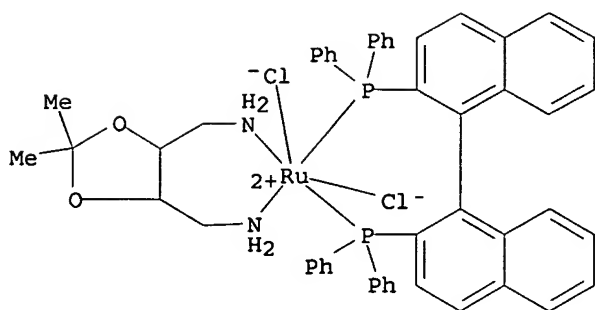
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RN 832117-83-6 HCAPLUS
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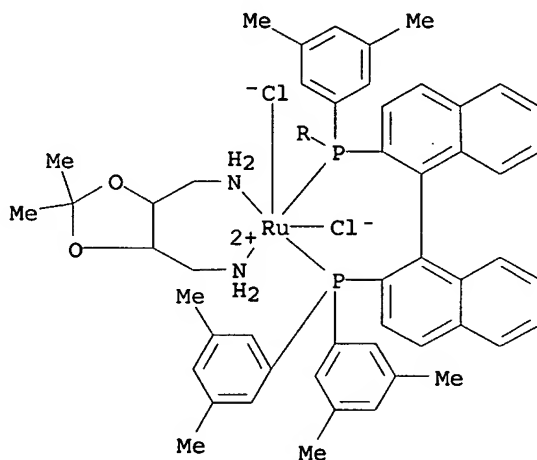


RN 832117-85-8 HCAPLUS
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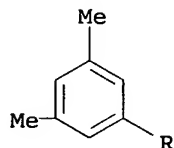


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 (CA INDEX NAME)

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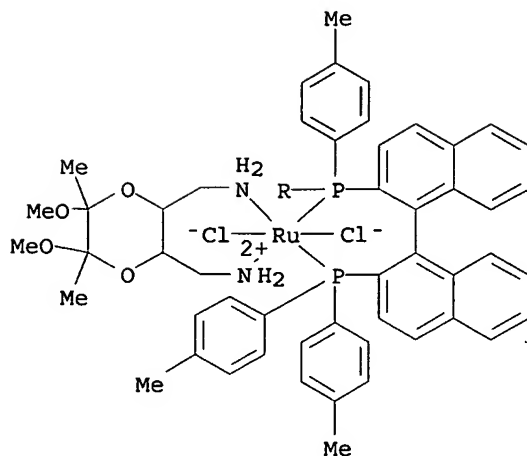


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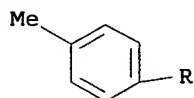


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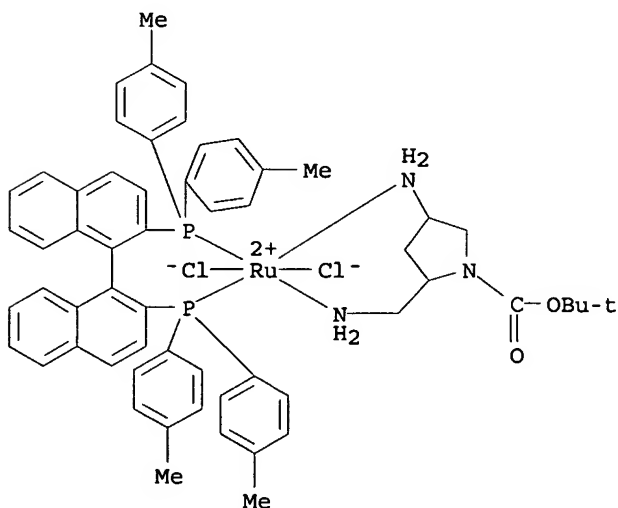
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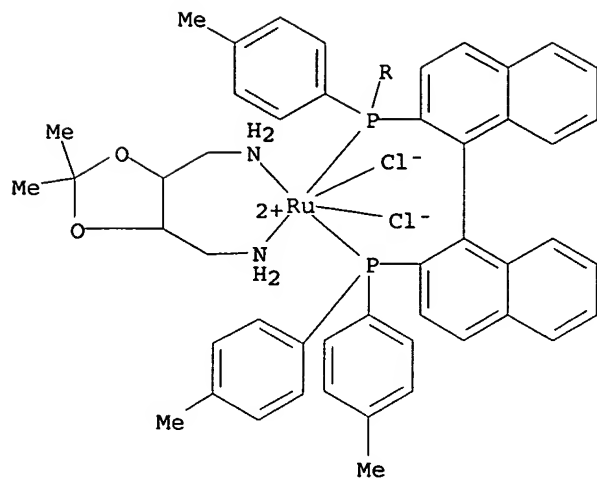


RN 832747-73-6 HCAPLUS
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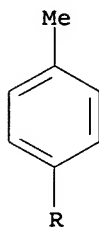


RN 832747-75-8 HCAPLUS
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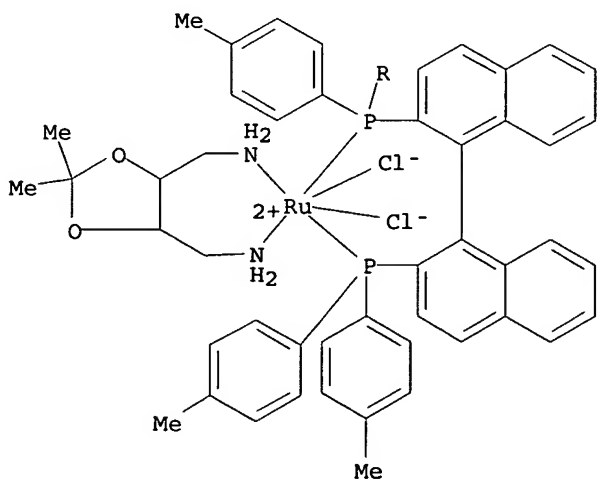


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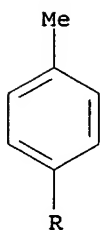


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 (CA INDEX NAME)

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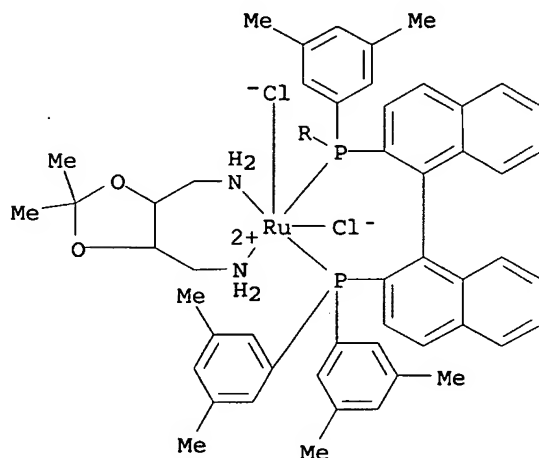


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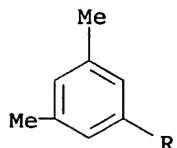


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 (CA INDEX NAME)

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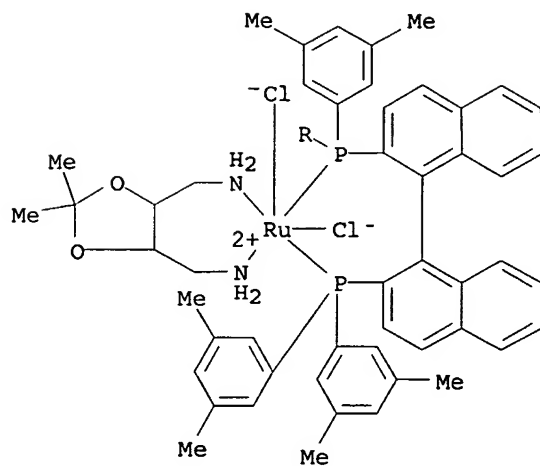


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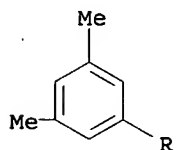


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 (CA INDEX NAME)

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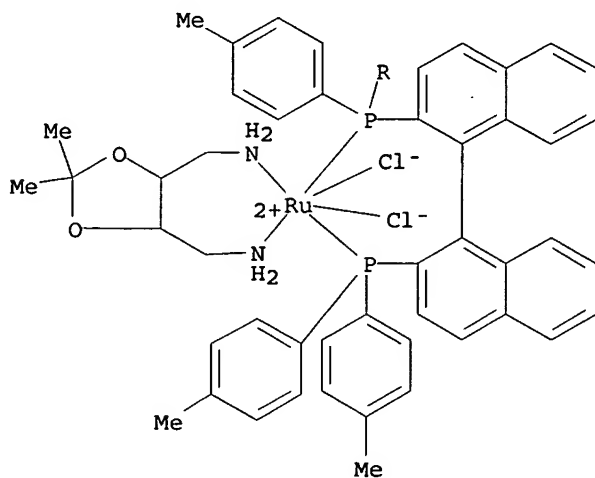


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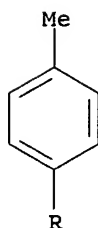


RN 832747-87-2 HCAPLUS
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 (CA INDEX NAME)

PAGE 1-A

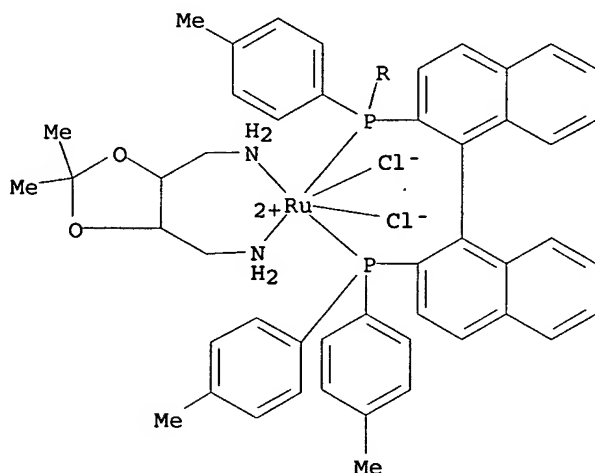


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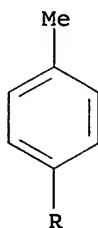


RN 832747-88-3 HCAPLUS
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PAGE 1-A



PAGE 2-A



IC ICM C07F015-00
 ICS C07D207-14
 CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 21, 67
 IT Amines, preparation
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (Group VIII element complexes; prepn. of group VIII
 transition metal complexes with chiral
 phosphine and chiral diamine ligands as

- catalysts for asym. hydrogenation of ketones)
- IT Group VIII element complexes
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (amine; prepn. of group VIII transition metal complexes with chiral phosphine and chiral diamine ligands as catalysts for asym. hydrogenation of ketones)
- IT Alcohols, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (asym. hydrogenation of ketones catalyzed by group VIII transition metal complexes with chiral phosphine and chiral diamine ligands)
- IT Transition metal complexes
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (phosphine, Group VIII; prepn. of group VIII transition metal complexes with chiral phosphine and chiral diamine ligands as catalysts for asym. hydrogenation of ketones)
- IT Asymmetric synthesis and induction
 (prepn. of group VIII transition metal complexes with chiral phosphine and chiral diamine ligands as catalysts for asym. hydrogenation of ketones)
- IT Hydrogenation
 Hydrogenation catalysts
 (stereoselective; prepn. of group VIII transition metal complexes with chiral phosphine and chiral diamine ligands as catalysts for asym. hydrogenation of ketones)
- IT Phosphines
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (transition metal complexes, Group VIII; prepn. of group VIII transition metal complexes with chiral phosphine and chiral diamine ligands as catalysts for asym. hydrogenation of ketones)
- IT 832747-68-9
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst for prepn. of chiral diol precursor from dibenzoylmethane in synthesis of chiral diamine ligand for ruthenium complex)
- IT 7440-18-8DP, Ruthenium, chiral diamine phosphine complexes
 749217-00-3P 832117-60-9P 832117-66-5P
 832117-81-4P 832117-83-6P 832117-84-7P
 832117-85-8P 832117-86-9P 832117-88-1P
 832117-89-2P 832117-97-2P 832747-69-0P 832747-70-3P
 832747-71-4P 832747-72-5P 832747-73-6P
 832747-74-7P 832747-75-8P 832747-76-9P
 832747-77-0P 832747-78-1P 832747-79-2P
 832747-80-5P 832747-81-6P 832747-82-7P 832747-83-8P
 832747-84-9P 832747-85-0P 832747-86-1P 832747-87-2P
 832747-88-3P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of group VIII transition metal complexes with chiral phosphine and chiral diamine ligands as catalysts for asym. hydrogenation of ketones)
- IT 120-46-7, Dibenzoylmethane 431-03-8, 2,3-Butadione 608-68-4
 21932-24-1 37002-45-2 37366-09-9, (Benzene)dichlororuthenium
 dimer 59158-71-3 61478-26-0 76189-56-5, (S)-Binap 99646-28-3
 100165-88-6 111320-77-5 135139-00-3 137219-86-4 221012-82-4
 362524-23-0 364732-88-7 442905-33-1 443347-10-2
 RL: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of group VIII transition
metal complexes with chiral phosphine and
chiral diamine ligands as catalysts for asym.
hydrogenation of ketones)

IT 59132-37-5P 108391-15-7P 119322-88-2P 133628-17-8P
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326596-48-9P 832117-78-9P 832117-79-0P 832747-53-2P
832747-54-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)

(prepn. of group VIII transition
metal complexes with chiral phosphine and
chiral diamine ligands as catalysts for asym.
hydrogenation of ketones)

L26 ANSWER 6 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:1127391 HCAPLUS

DOCUMENT NUMBER: 142:56522

TITLE: Chiral ligands for application in asymmetric
syntheses

INVENTOR(S): Mesequer, Benjamin; Arlt, Dieter

PATENT ASSIGNEE(S): Bayer Chemicals Ag, Germany

SOURCE: PCT Int. Appl., 28 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004111063	A2	20041223	WO 2004-EP5930	20040602

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WO 2004111063 A3 20050331

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GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
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AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,
PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
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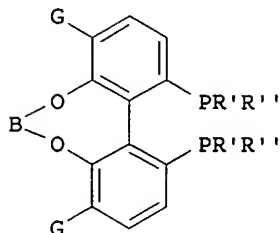
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PRIORITY APPLN. INFO.: DE 2003-10327109 A 20030613

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OTHER SOURCE(S): CASREACT 142:56522; MARPAT 142:56522
 GI



I

AB The invention relates to the prepn. of biaryl bisphosphines I (B = (CHR₁)_n(R₂C:CR₃)(CHR₄)_m, R₁-R₄ = H, alkyl, n, m = 1-8; G = Cl, H; R', R'' = aryl, alkyl) and intermediates thereof. Furthermore, the invention relates to catalysts produced from the biaryl bisphosphines and the use thereof in asym. syntheses. Thus, reaction of (S)-[5,5'-dichloro-6,6'-dihydroxybiphenyl-2,2'-diyl]bis(diphenylphosphine oxide) with allyl chloride in DMF in the presence of K₂CO₃ gave (S)-[5,5'-dichloro-6,6'-(1,4-but-2-enedioxy)biphenyl-2,2'-diyl]bis(diphenylphosphine oxide) as cocatalyst for ruthenium catalyzed enantioselective hydrogenation.

IT 810674-60-3P 810674-65-8P 810674-66-9P
 810674-70-5P 810674-71-6P 810674-72-7P
 810674-73-8P 810674-74-9P 810674-75-0P
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 810674-79-4P 810674-80-7P 810674-81-8P
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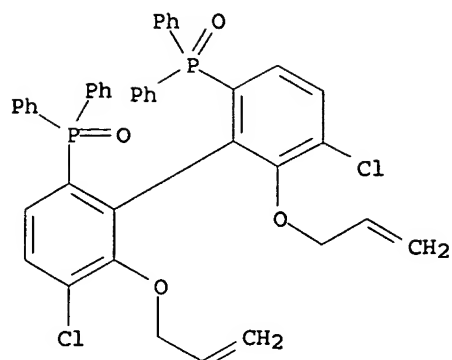
RL: CAT (Catalyst use); SPN (Synthetic preparation);

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(prepn. of biaryl bisphosphines as chiral
 ligands for ruthenium complex catalyzed enantioselective
 hydrogenation or in asym. synthesis)

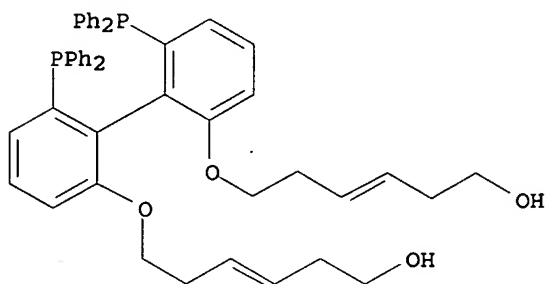
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CN Phosphine oxide, [(1S)-5,5'-dichloro-6,6'-bis(2-propenyloxy)[1,1'-biphenyl]-2,2'-diyl]bis(diphenyl- (9CI) (CA INDEX NAME)



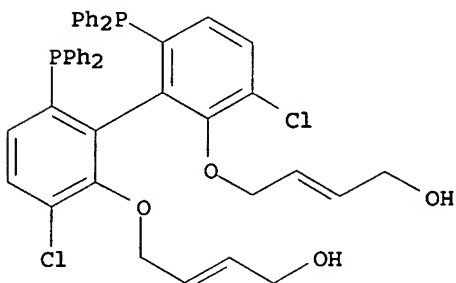
RN 810674-65-8 HCAPLUS

CN 3-Hexen-1-ol, 6,6'-[[[(1S)-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (3Z,3'Z)- (9CI) (CA INDEX NAME)



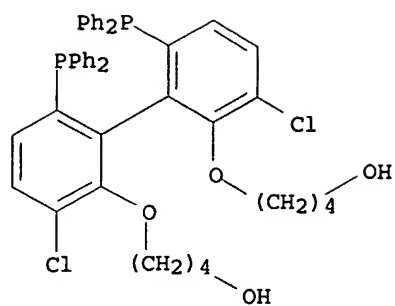
RN 810674-66-9 HCAPLUS

CN 2-Buten-1-ol, 4,4'-[[[(1S)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)

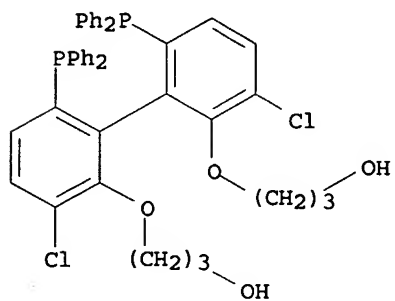


RN 810674-70-5 HCAPLUS

CN 1-Butanol, 4,4'-[[[(1S)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)

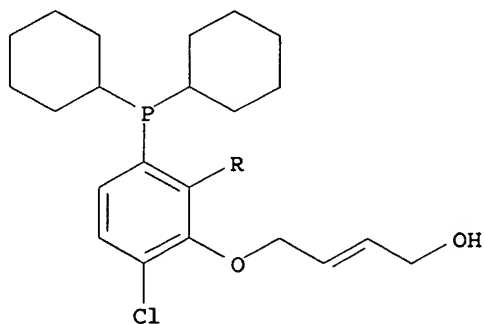


RN 810674-71-6 HCAPLUS
 CN 1-Propanol, 3,3'-[[[(1S)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (9CI)
 (CA INDEX NAME)

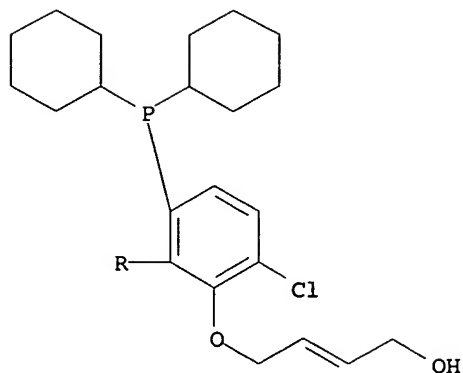


RN 810674-72-7 HCAPLUS
 CN 2-Buten-1-ol, 4,4'-[[[(1R)-3,3'-dichloro-6,6'-bis(dicyclohexylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)

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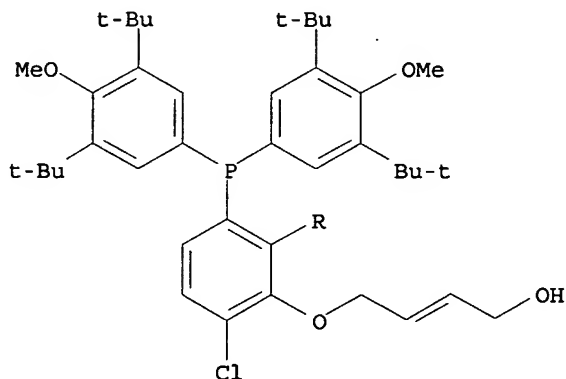


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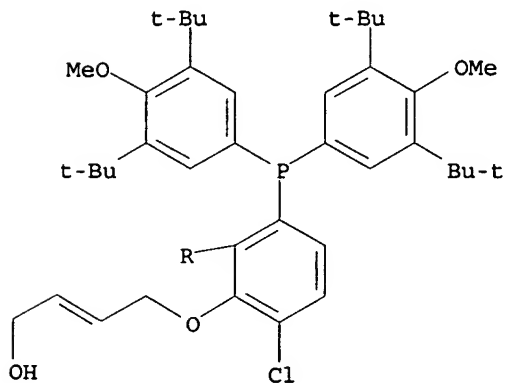


RN 810674-73-8 HCAPLUS
 CN 2-Buten-1-ol, 4,4'-[[[(1R)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)

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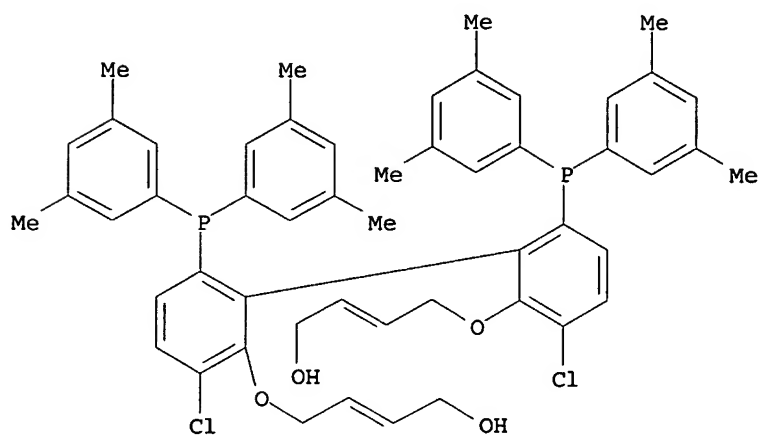


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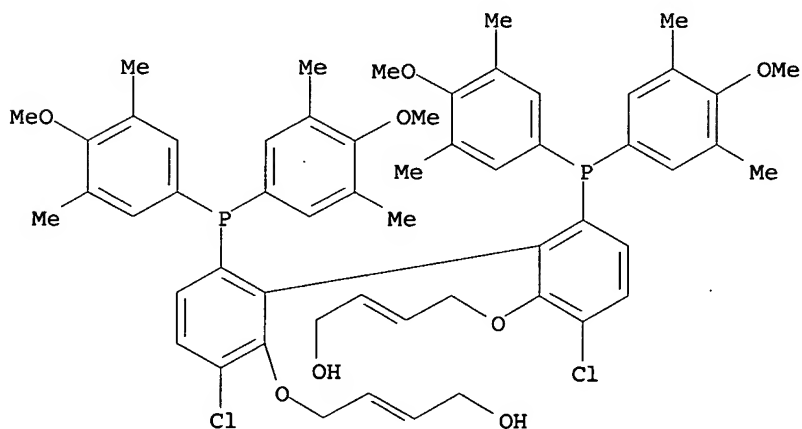
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 CN 2-Buten-1-ol, 4,4'-[[[(1R)-6,6'-bis[bis(3,5-dimethylphenyl)phosphino]-

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(9CI) (CA INDEX NAME)



RN 810674-75-0 HCAPLUS

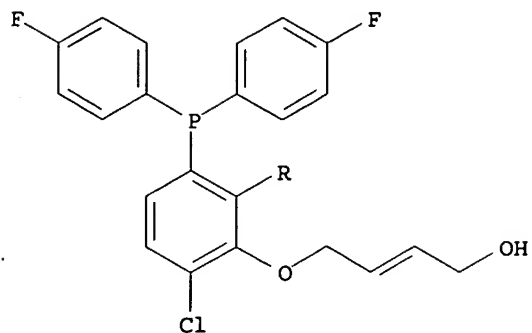
CN 2-Buten-1-ol, 4,4'-[[[(1R)-6,6'-bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)



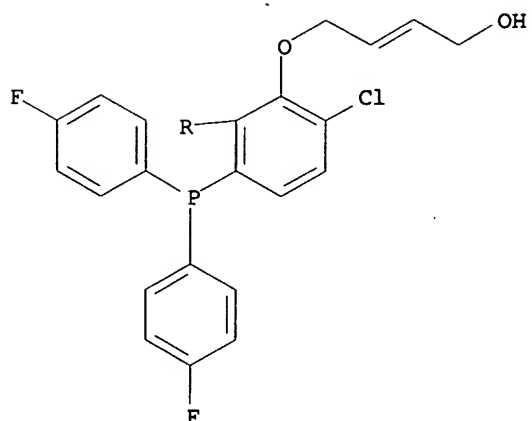
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CN 2-Buten-1-ol, 4,4'-[[[(1R)-6,6'-bis[bis(4-fluorophenyl)phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)

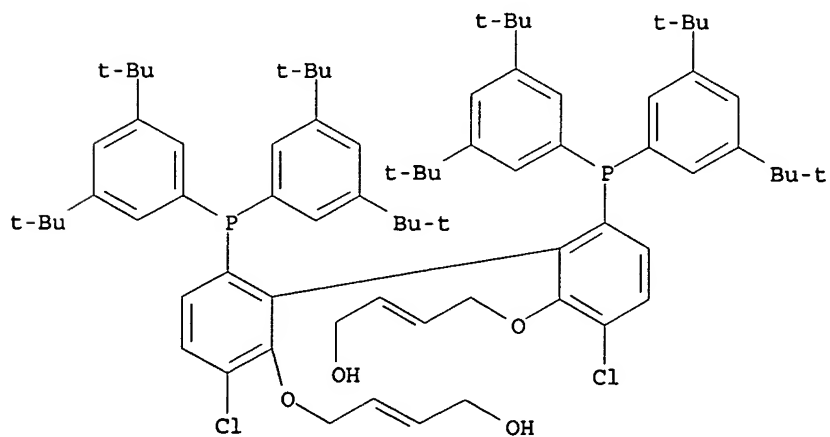
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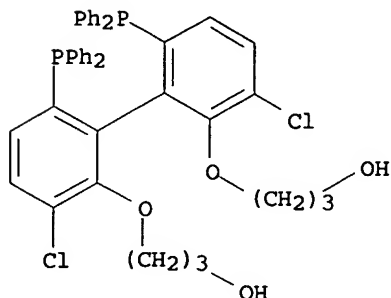


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 CN 2-Buten-1-ol, 4,4'-[[{(1R)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)phenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)

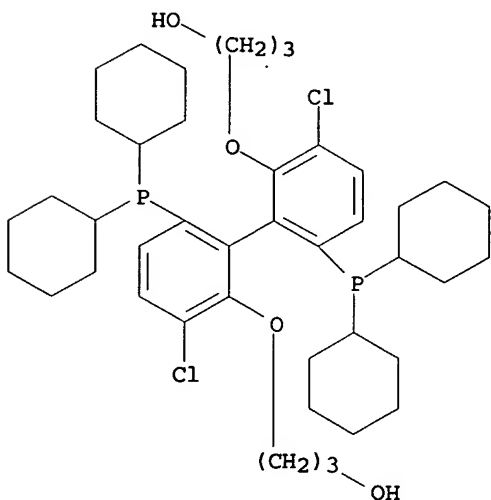


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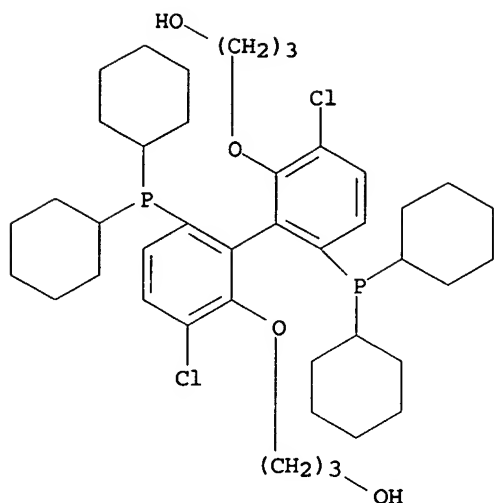
CN 1-Propanol, 3,3'-[[(1R)-3,3'-dichloro-6,6'-bis(diphenylphosphino) [1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI)
(CA INDEX NAME)



RN 810674-79-4 HCAPLUS
CN 1-Propanol, 3,3'-[[(1R)-3,3'-dichloro-6,6'-bis(dicyclohexylphosphino) [1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)

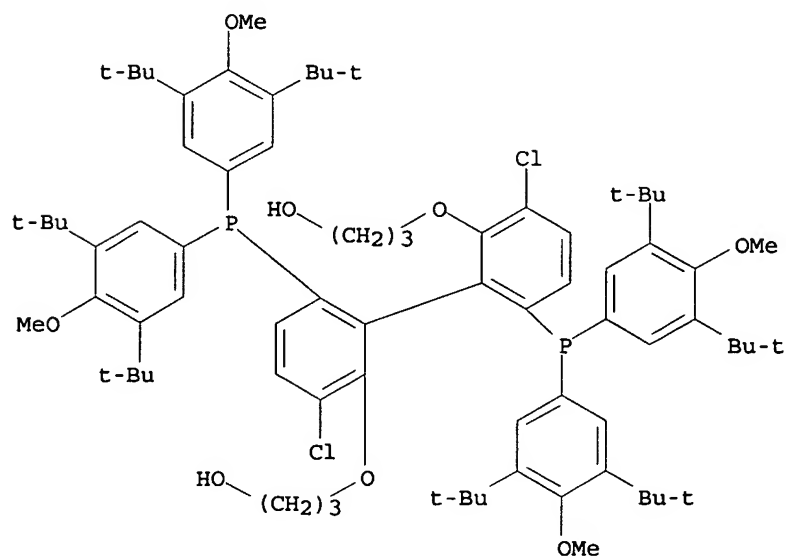


RN 810674-80-7 HCAPLUS
CN 1-Propanol, 3,3'-[[(1S)-3,3'-dichloro-6,6'-bis(dicyclohexylphosphino) [1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



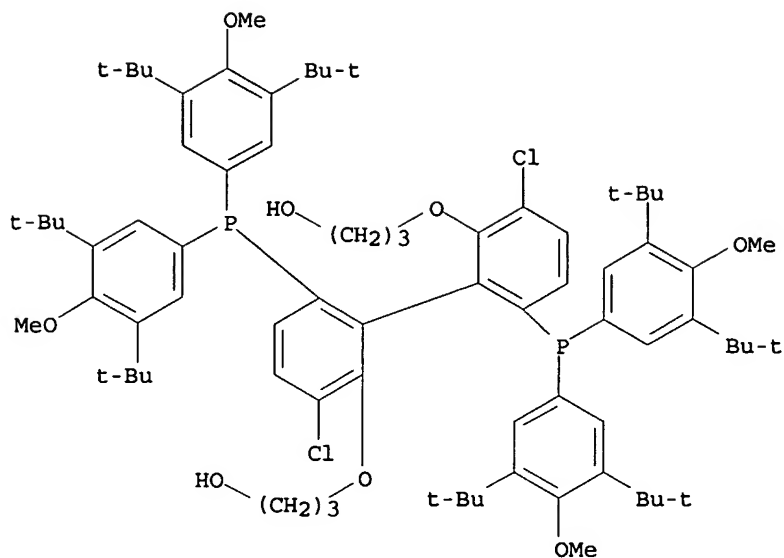
RN 810674-81-8 HCAPLUS

CN 1-Propanol, 3,3'-[[[(1R)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)

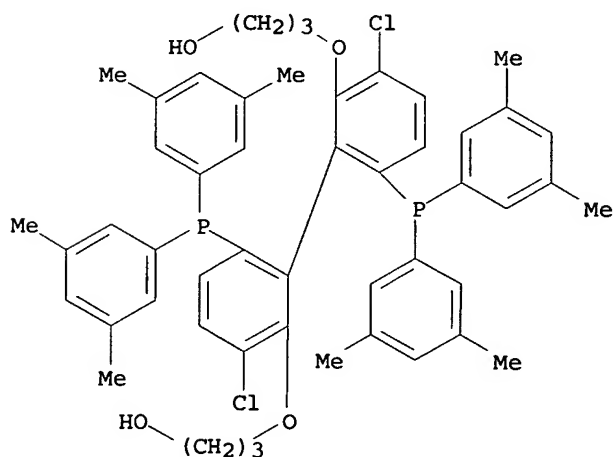


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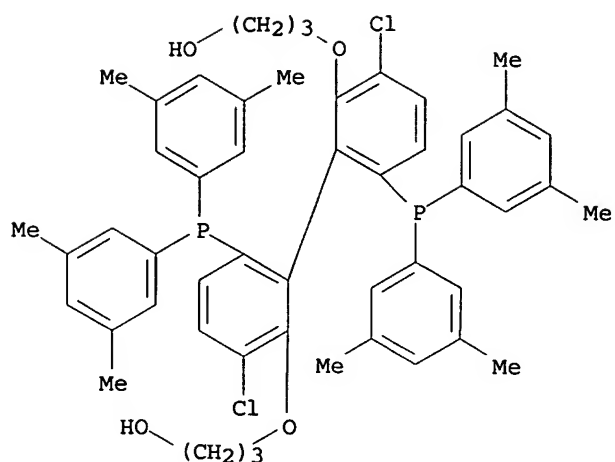
CN 1-Propanol, 3,3'-[[[(1S)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



RN 810674-83-0 HCAPLUS
 CN 1-Propanol, 3,3'-[[[(1R)-6,6'-bis[bis(3,5-dimethylphenyl)phosphino]-
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 INDEX NAME)

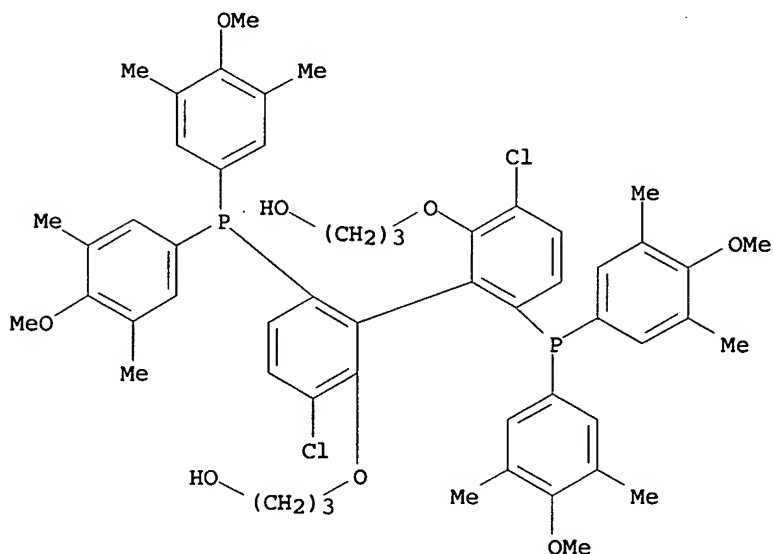


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 INDEX NAME)



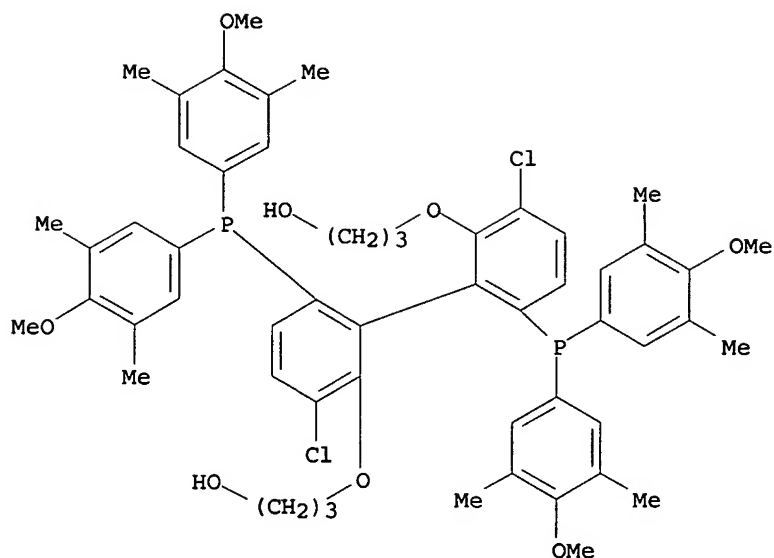
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CN 1-Propanol, 3,3'-[[[(1R)-6,6'-bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



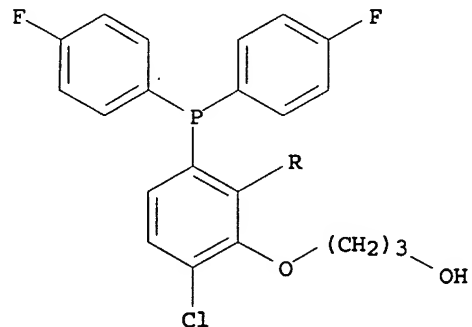
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CN 1-Propanol, 3,3'-[[[(1S)-6,6'-bis[bis(4-methoxy-3,5-dimethylphenyl)phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)

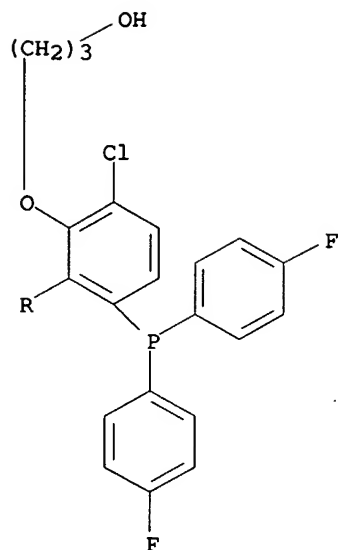


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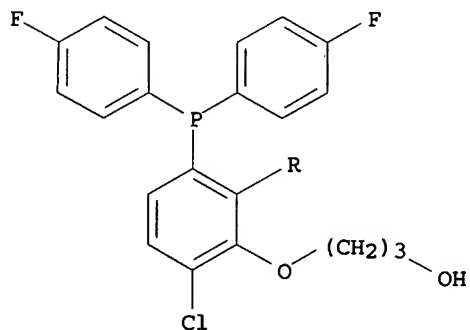


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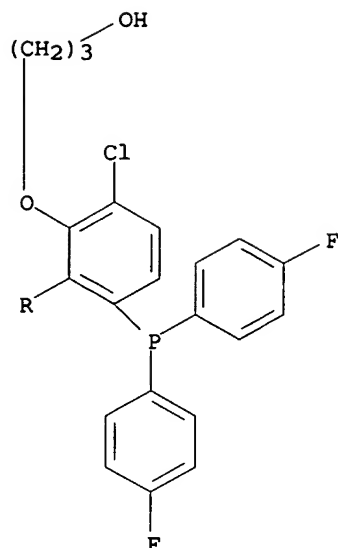


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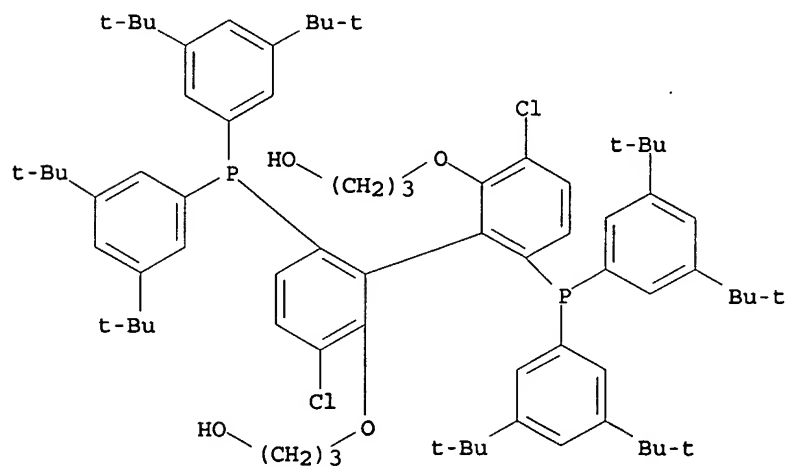


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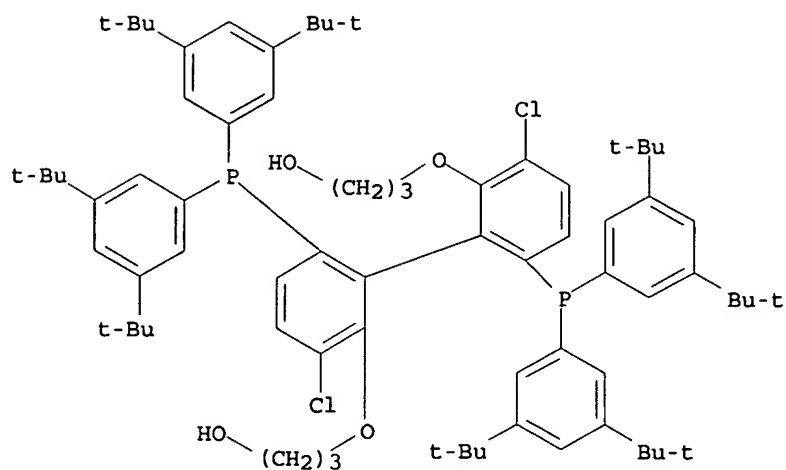
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CN 1-Propanol, 3,3'-[[[(1R)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)phenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



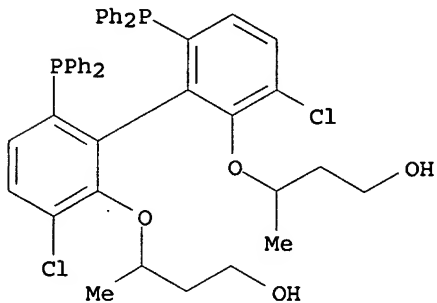
RN 810674-90-9 HCAPLUS

CN 1-Propanol, 3,3'-[[[(1S)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)phenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



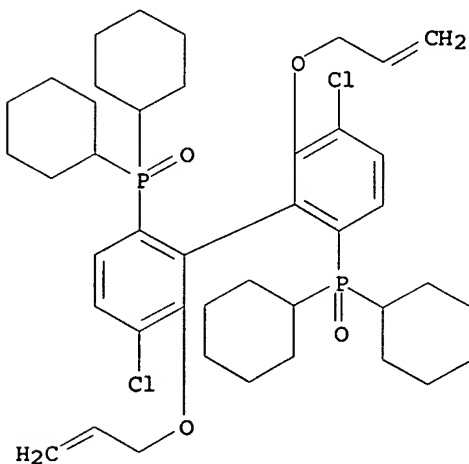
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CN 1-Butanol, 3,3'-[[[(1R)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI)
(CA INDEX NAME)



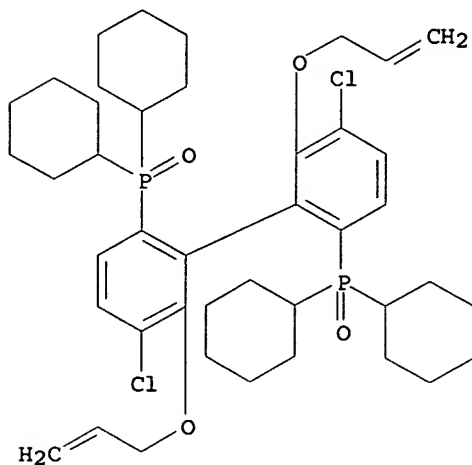
RN 810674-92-1 HCAPLUS

CN Phosphine oxide, [(1R)-5,5'-dichloro-6,6'-bis(2-propenyloxy)[1,1'-biphenyl]-2,2'-diyl]bis[dicyclohexyl- (9CI) (CA INDEX NAME)



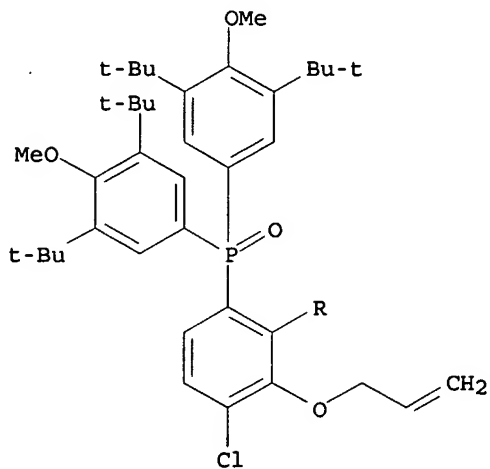
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CN Phosphine oxide, [(1S)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[dicyclohexyl- (9CI) (CA INDEX NAME)]



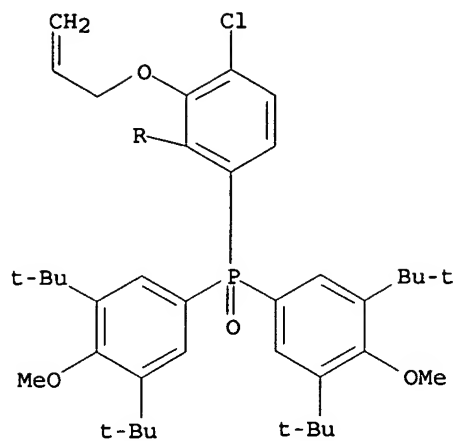
RN 810674-94-3 HCAPLUS

CN Phosphine oxide, [(1R)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]- (9CI) (CA INDEX NAME)]



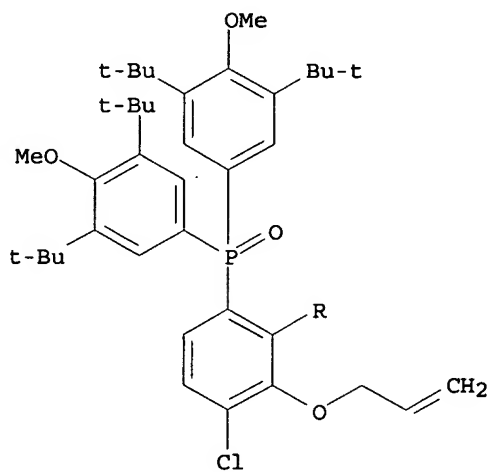
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PAGE 2-A

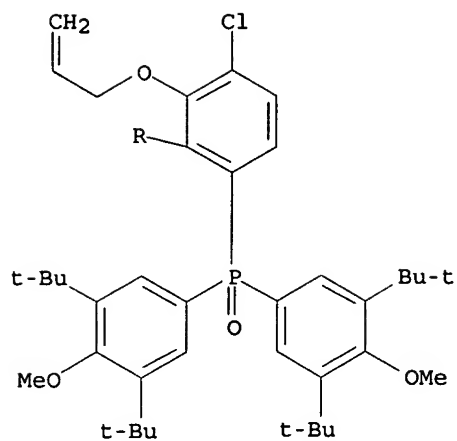


RN 810674-95-4 HCAPLUS
 CN Phosphine oxide, [(1S)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

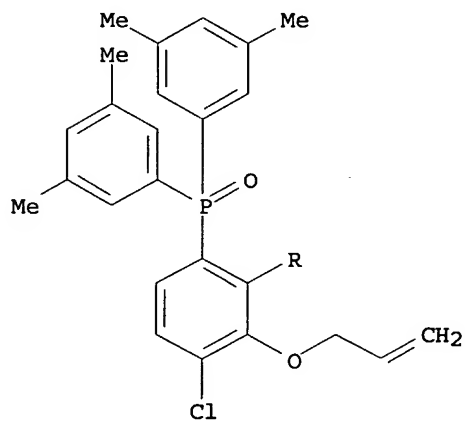


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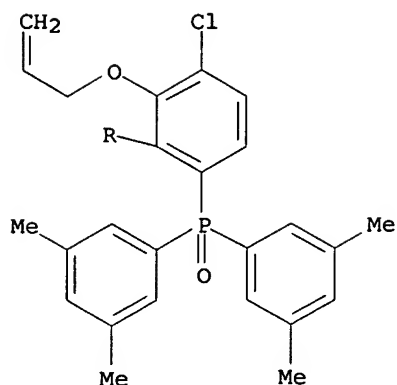


RN 810674-96-5 HCAPLUS
 CN Phosphine oxide, [(1R)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)]

PAGE 1-A

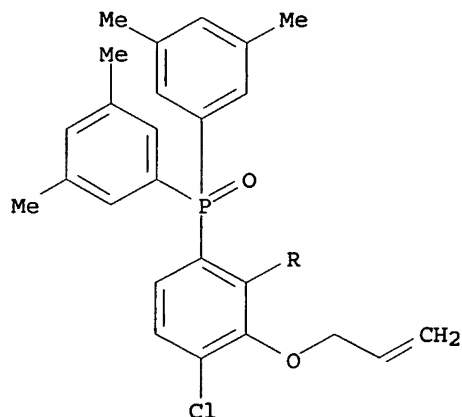


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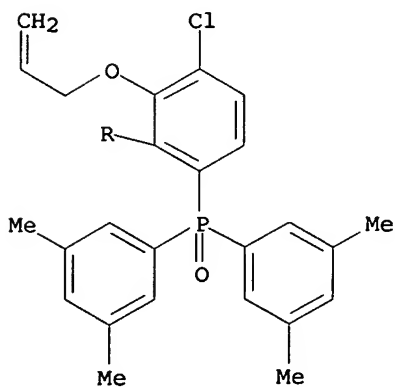


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 CN Phosphine oxide, [(1S)-5,5'-dichloro-6,6'-bis(2-propenyloxy)[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)-(9CI) (CA INDEX NAME)]

PAGE 1-A

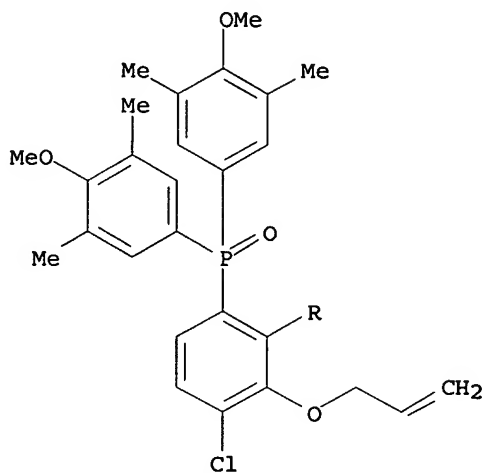


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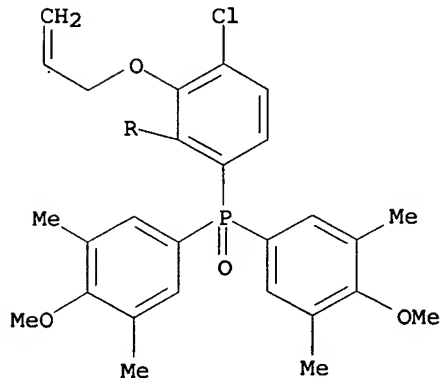


RN 810674-98-7 HCAPLUS
 CN Phosphine oxide, [(1R)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[bis(4-methoxy-3,5-dimethylphenyl)- (9CI)
 (CA INDEX NAME)

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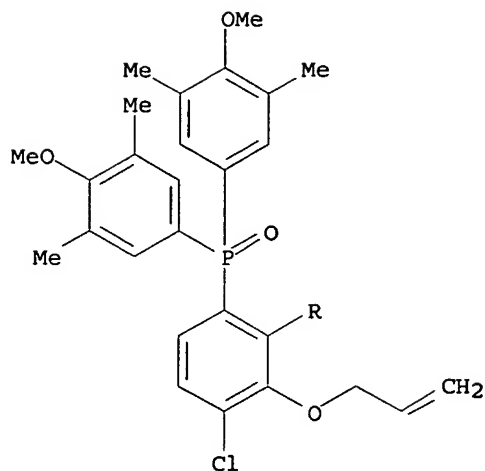


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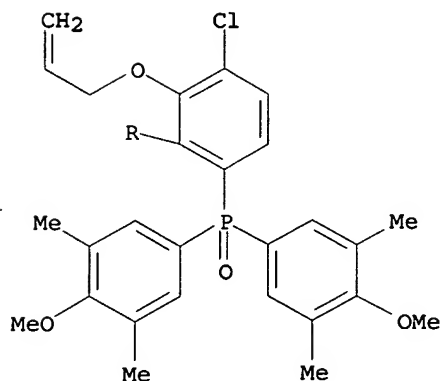


RN 810674-99-8 HCAPLUS
 CN Phosphine oxide, [(1S)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[bis(4-methoxy-3,5-dimethylphenyl)- (9CI)
 (CA INDEX NAME)

PAGE 1-A

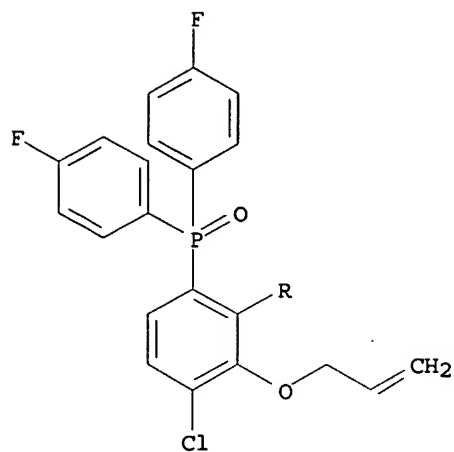


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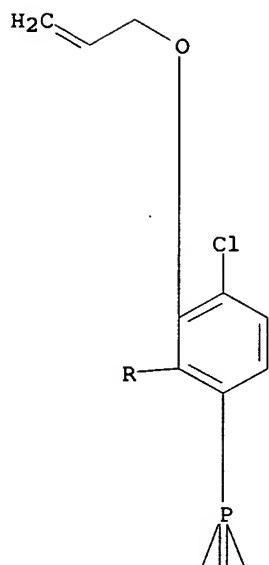


RN 810675-00-4 HCAPLUS
 CN Phosphine oxide, [(1R)-5,5'-dichloro-6,6'-bis(2-propenyloxy)[1,1'-biphenyl]-2,2'-diyl]bis[bis(4-fluorophenyl)-(9CI) (CA INDEX NAME)]

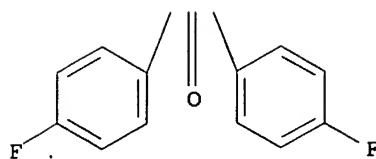
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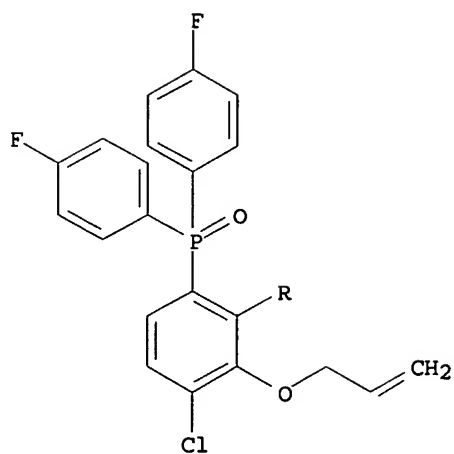


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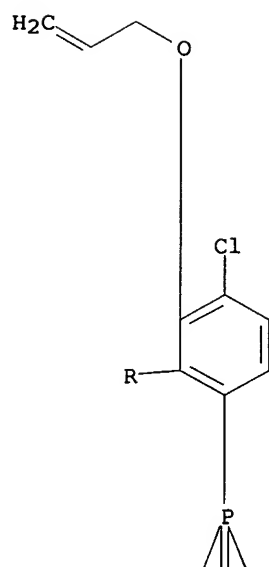


RN 810675-01-5 HCAPLUS
 CN Phosphine oxide, [(1S)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[bis(4-fluorophenyl)- (9CI) (CA INDEX NAME)]

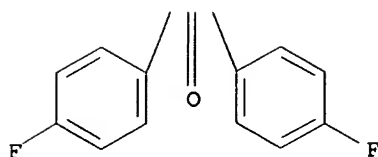
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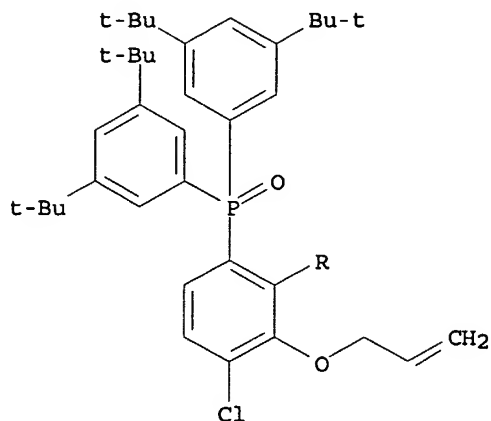
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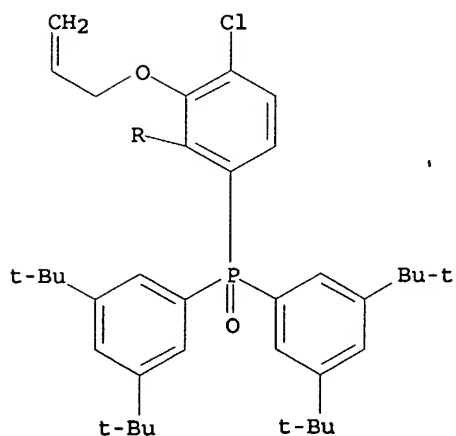
RN 810675-02-6 HCAPLUS
 CN Phosphine oxide, [(1R)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-

biphenyl]-2,2'-diyl]bis[bis[3,5-bis(1,1-dimethylethyl)phenyl]- (9CI)
(CA INDEX NAME)

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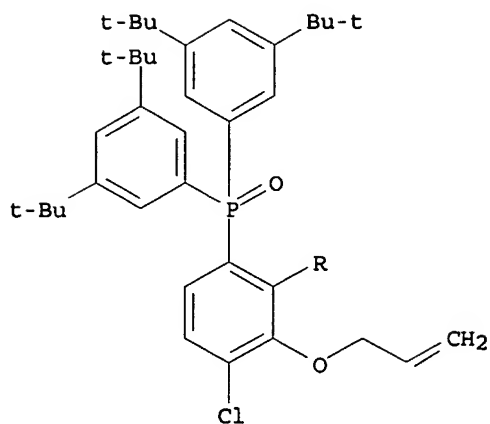


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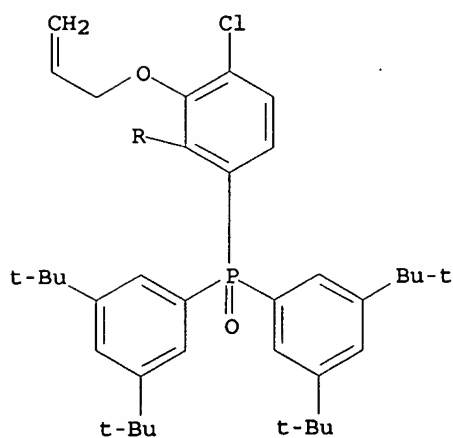


RN 810675-03-7 HCAPLUS
CN Phosphine oxide, [(1S)-5,5'-dichloro-6,6'-bis(2-propenyloxy) [1,1'-biphenyl]-2,2'-diyl]bis[bis[3,5-bis(1,1-dimethylethyl)phenyl]- (9CI)
(CA INDEX NAME)

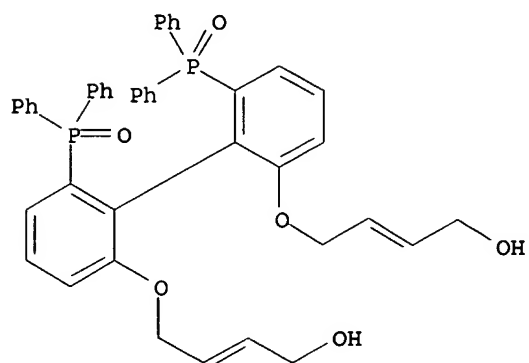
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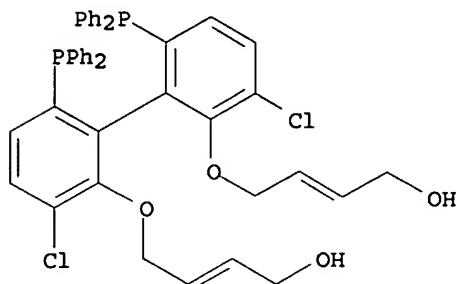


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 CN 2-Buten-1-ol, 4,4'-[[{(1R)-6,6'-bis(diphenylphosphinyl)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)}bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)



RN 810675-20-8 HCAPLUS

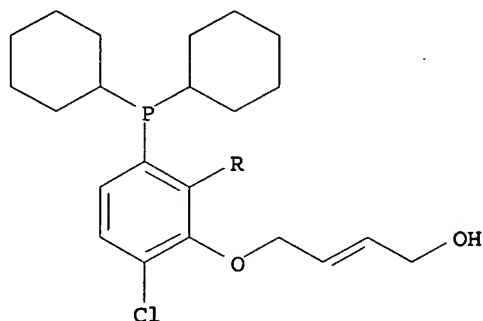
CN 2-Buten-1-ol, 4,4'-[[[(1R)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)



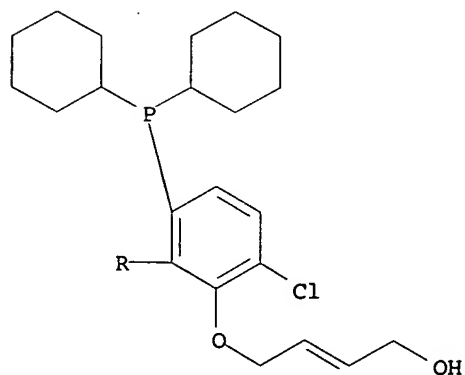
RN 810675-21-9 HCAPLUS

CN 2-Buten-1-ol, 4,4'-[[[(1S)-3,3'-dichloro-6,6'-bis(dicyclohexylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)

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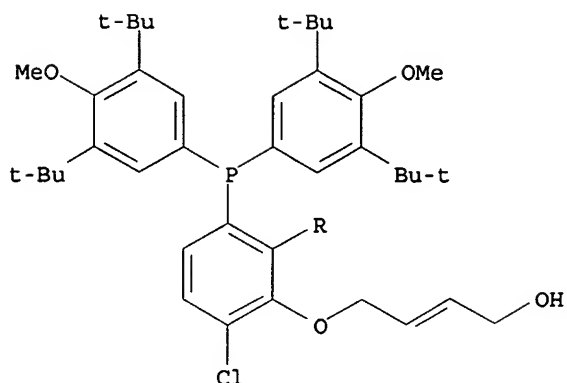
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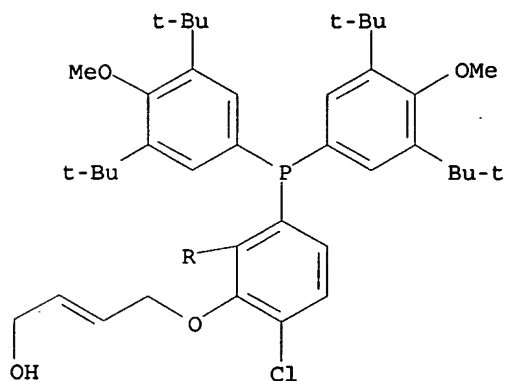
RN 810675-22-0 HCAPLUS

CN 2-Buten-1-ol, 4,4'-[[[(1S)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)

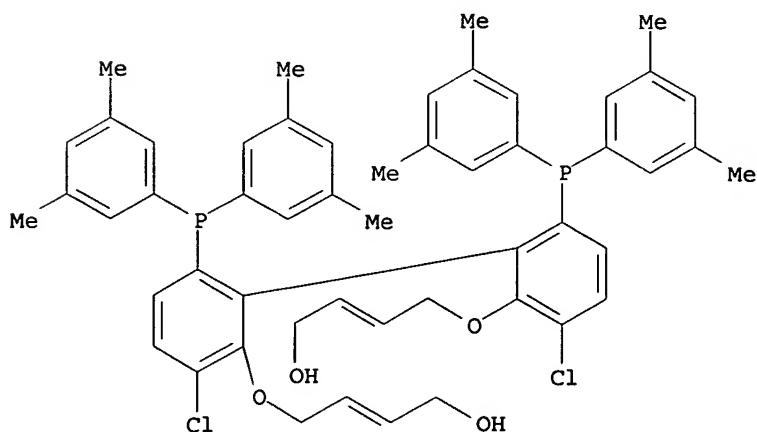
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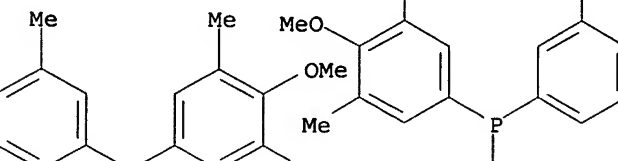
PAGE 2-A



RN 810675-23-1 HCAPLUS
 CN 2-Buten-1-ol, 4,4'-[[[(1S)-6,6'-bis[bis(3,5-dimethylphenyl)phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)-(9CI) (CA INDEX NAME)

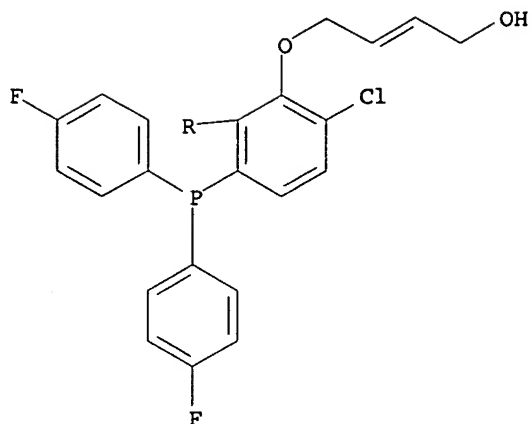


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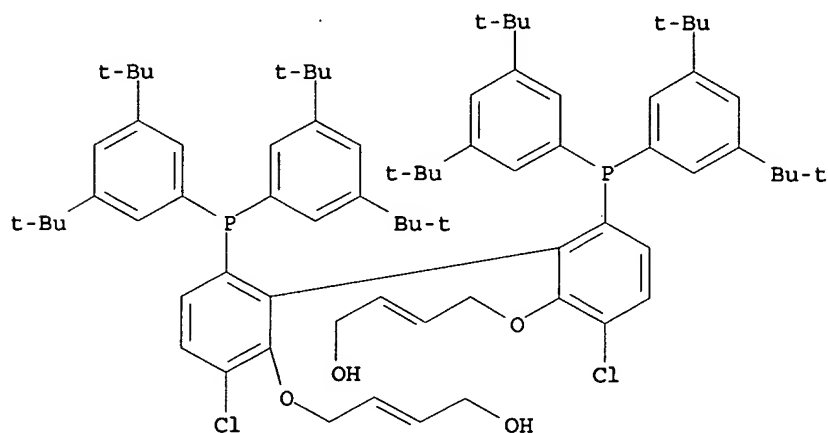
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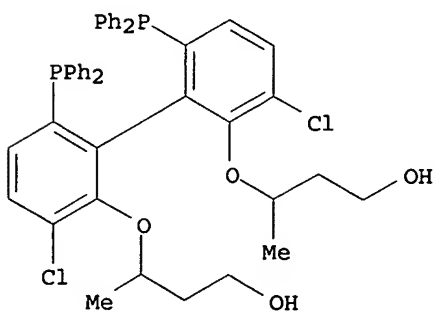
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CN 2-Buten-1-ol, 4,4'-[[[(1S)-6,6'-bis[bis[3,5-bis(1,1-dimethylethyl)phenyl]phosphino]-3,3'-dichloro[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis-, (2Z,2'Z)- (9CI) (CA INDEX NAME)



RN 810675-27-5 HCAPLUS

CN 1-Butanol, 3,3'-[[[(1S)-3,3'-dichloro-6,6'-bis(diphenylphosphino)[1,1'-biphenyl]-2,2'-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



IC ICM C07F009-53
 CC 29-7 (Organometallic and Organometalloidal
 Compounds)
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 810675-27-5P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of biarylphosphines as chiral
 ligands for ruthenium complex catalyzed enantioselective
 hydrogenation or in asym. synthesis)

L26 ANSWER 7 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:931029 HCAPLUS

DOCUMENT NUMBER: 141:397266

TITLE: Chiral diphosphines in insoluble form, their
 preparation, and their uses as ligands in the
 synthesis of complexes destined for asymmetric
 catalysis

INVENTOR(S): Lemaire, Marc; Berthod, Mikael

PATENT ASSIGNEE(S): Rhodia Chimie, Fr.; Centre National de la
 Recherche Scientifique CNRS.

SOURCE: Fr. Demande, 53 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

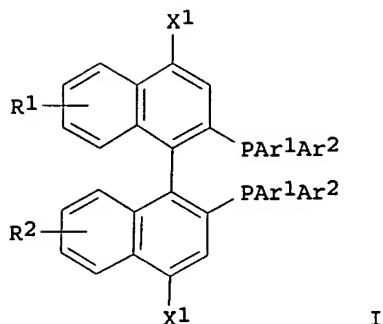
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2854401	A1	20041105	FR 2003-5253	200304 29

PRIORITY APPLN. INFO.: <-- FR 2003-5253

200304
29

OTHER SOURCE(S): MARPAT 141:397266

GI



- AB Chiral diphosphines I (R1, R2 = H or substituent; Ar1, Ar2 = alkyl, alkenyl, cycloalkyl, aryl, or aralkyl; X1 = amino, aminomethyl, OH, HOCH2, carboxylic, ester, NCO, or OCNCH2) are polycond. with the appropriate condensation polymer-forming monomer to give optically active polymers that are able to complex with transition metals to give complexes for asym. hydrogenation catalysis. The optically active polymers are also useful for catalysts in assocn. with diamines for selective redn. of ketones. A typical catalyst, useful for hydrogenation of Et acetoacetate to Et 3-hydroxybutyrate, was manufd. by polymn. of (S)-4,4'-diaminomethylBINAP with 2,6-diisocyanatotoluene and complexation of the polymer with Ru.
- IT 781646-74-0DP, ruthenium complexes 782502-73-2DP, ruthenium complexes
 RL: CAT (Catalyst use); IMF (Industrial manufacture);
 PREP (Preparation); USES (Uses)
 (chiral binaphthyl diphosphines in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with transition metals for asym. catalysis)
- RN 781646-74-0 HCAPLUS
- CN Poly[iminocarbonylimino(2-methyl-1,3-phenylene)iminocarbonyliminomet hylene[(1S)-2,2'-bis(diphenylphosphino)[1,1'-binaphthalene]-4,4'-diyl]methylene] (9CI) (CA INDEX NAME)

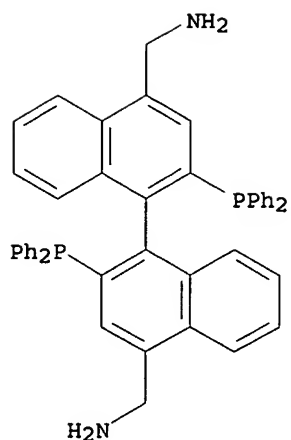
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

- RN 782502-73-2 HCAPLUS
- CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-, (1S)-, polymer with 1,3-diisocyanato-2-methylbenzene (9CI) (CA INDEX NAME)

CM 1

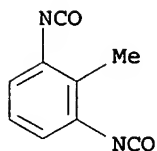
CRN 681244-49-5
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CM 2

CRN 91-08-7

CMF C9 H6 N2 O2



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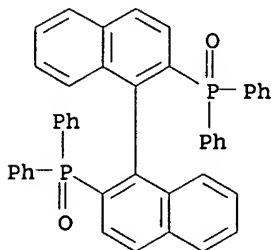
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP**

(Preparation); RACT (Reactant or reagent)

(ligand precursor; chiral binaphthyl diphosphines in insol. form
 for manuf. of optically active polycondensation polymers for
 manuf. of complexes with transition metals for asym. catalysis)

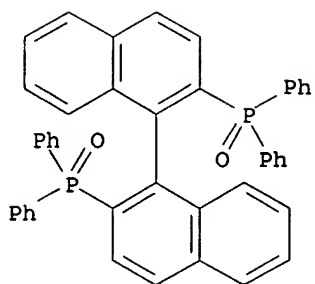
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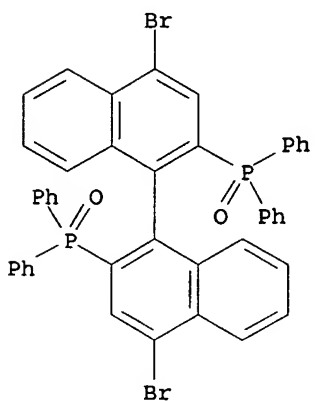
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 (9CI) (CA INDEX NAME)



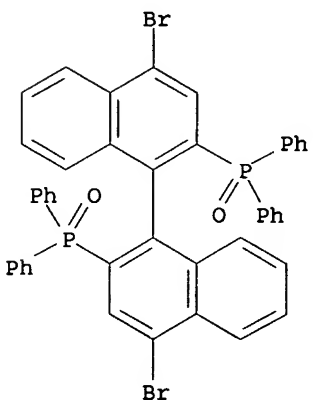
RN 328234-96-4 HCAPLUS

CN Phosphine oxide, [(1R)-4,4'-dibromo[1,1'-binaphthalene]-2,2'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



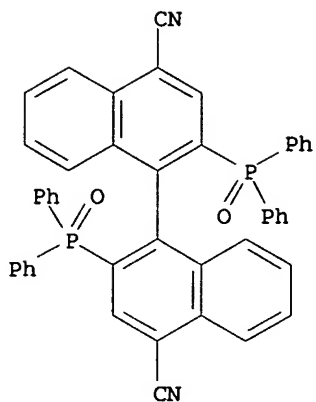
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CN Phosphine oxide, [(1S)-4,4'-dibromo[1,1'-binaphthalene]-2,2'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)

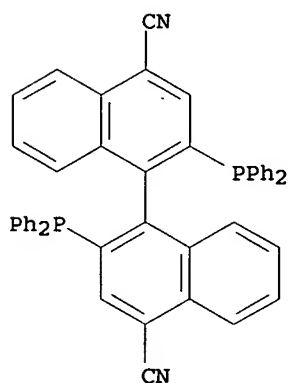


RN 681244-39-3 HCAPLUS

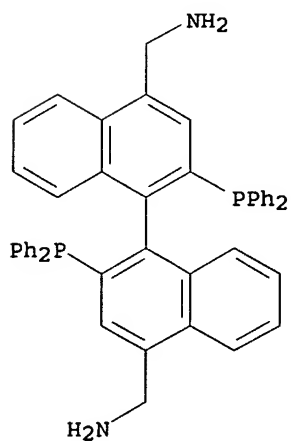
CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-bis(diphenylphosphinyl)-, (1S)- (9CI) (CA INDEX NAME)



RN 681244-43-9 HCAPLUS
 CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-bis(diphenylphosphino)-, (1S)- (9CI) (CA INDEX NAME)

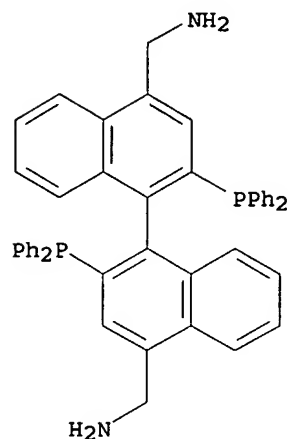


RN 681244-47-3 HCAPLUS
 CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-, (1R)- (9CI) (CA INDEX NAME)



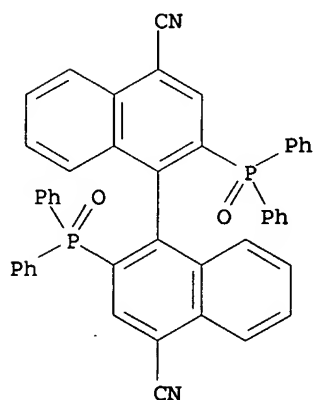
RN 681244-49-5 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-
, (1S)- (9CI) (CA INDEX NAME)



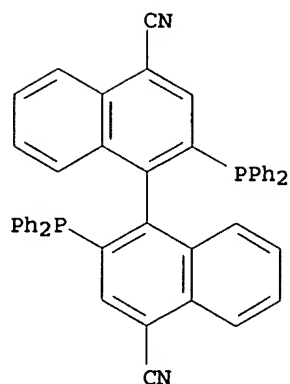
RN 709640-84-6 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-bis(diphenylphosphinyl)-, (1R)- (9CI) (CA INDEX NAME)



RN 709640-85-7 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-bis(diphenylphosphino)-, (1R)- (9CI) (CA INDEX NAME)



IT 781646-74-0P 782502-73-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(ligand; chiral binaphthyl diphosphines in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with transition metals for asym. catalysis)

RN 781646-74-0 HCAPLUS

CN Poly[iminocarbonylimino(2-methyl-1,3-phenylene)iminocarbonyliminomet hylene[(1S)-2,2'-bis(diphenylphosphino)[1,1'-binaphthalene]-4,4'-diyl)methylene] (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

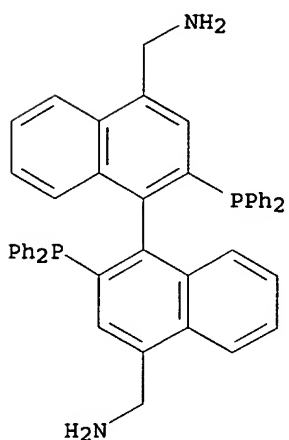
RN 782502-73-2 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-, (1S)-, polymer with 1,3-diisocyanato-2-methylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 681244-49-5

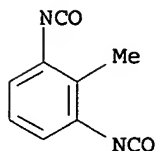
CMF C46 H38 N2 P2



CM 2

CRN 91-08-7

CMF C9 H6 N2 O2



- IC ICM C07F009-50
ICS C07B053-00; C08G071-02
- CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 29, 35, 67, 78
- IT Transition metal complexes
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(chiral binaphthyl diphosphines in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with transition metals for asym. catalysis)
- IT Amines, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(diamines, **ligand precursors**; chiral binaphthyl **diphosphines** in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with **transition metals** for asym. catalysis)
- IT Carboxylic acids, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(dicarboxylic, **ligand precursors**; chiral binaphthyl **diphosphines** in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with **transition metals** for asym. catalysis)
- IT Esters, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(diesters, **ligand precursors**; chiral binaphthyl **diphosphines** in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with **transition metals** for asym. catalysis)
- IT Glycols, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(**ligand precursors**; chiral binaphthyl **diphosphines** in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with **transition metals** for asym. catalysis)
- IT Polyamides, **preparation**
Polyesters, **preparation**
Polyimides, **preparation**
Polyureas
Polyurethanes, **preparation**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(**ligands**; chiral binaphthyl **diphosphines** in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with **transition metals** for asym. catalysis)
- IT 7439-88-5DP, Iridium, complexes with chiral diphosphinobinaphthyl-

contg. polymers 7440-02-0DP, Nickel, complexes with chiral diphosphinobinaphthyl-contg. polymers 7440-05-3DP, Palladium, complexes with chiral diphosphinobinaphthyl-contg. polymers 7440-06-4DP, Platinum, complexes with chiral diphosphinobinaphthyl-contg. polymers 7440-15-5DP, Rhenium, complexes with chiral diphosphinobinaphthyl-contg. polymers 7440-16-6DP, Rhodium, complexes with chiral diphosphinobinaphthyl-contg. polymers 7440-18-8DP, Ruthenium, complexes with diaminomethylBINAP-diisocyanatotoluene copolymer 7440-48-4DP, Cobalt, complexes with chiral diphosphinobinaphthyl-contg. polymers 781646-74-0DP, ruthenium complexes 782502-73-2DP, ruthenium complexes

RL: CAT (Catalyst use); IMF (Industrial manufacture);

PREP (Preparation); USES (Uses)

(chiral binaphthyl diphosphines in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with transition metals for asym. catalysis)

IT 5700-60-7, 1,2-Diamino-1,2-diphenylethane

RL: CAT (Catalyst use); USES (Uses)

(ketone redn. cocatalyst; chiral binaphthyl diphosphines in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with transition metals for asym. catalysis)

IT 94041-16-4P 94041-18-6P 328234-96-4P

681244-35-9P 681244-39-3P 681244-43-9P

681244-47-3P 681244-49-5P 709640-84-6P

709640-85-7P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(ligand precursor; chiral binaphthyl diphosphines in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with transition metals for asym. catalysis)

IT 781646-74-0P 782502-73-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(ligand; chiral binaphthyl diphosphines in insol. form for manuf. of optically active polycondensation polymers for manuf. of complexes with transition metals for asym. catalysis)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 8 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:847213 HCAPLUS

DOCUMENT NUMBER: 141:350269

TITLE: Water-soluble chiral diphosphines and their uses as ligands on transition-metal catalysts for asymmetric synthesis

INVENTOR(S): Lemaire, Marc; Saluzzo, Christine; Berthod, Mikael

PATENT ASSIGNEE(S): Rhodia Chimie, Fr.; Centre National de la Recherche Scientifique CNRS

SOURCE: Fr. Demande, 64 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2853652	A1	20041015	FR 2003-4391	20030409

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PRIORITY APPLN. INFO.:

FR 2003-4391

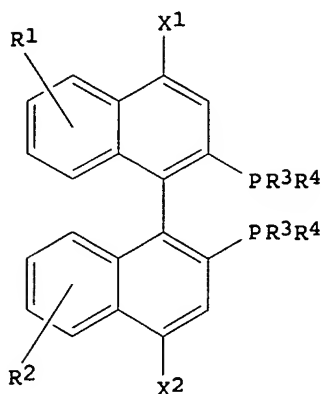
200304

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OTHER SOURCE(S):
GI

MARPAT 141:350269

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AB Racemic or optically active, water-sol., 4,4'-disubstituted binaphthyl-derived diphosphines (I; R1, R2 = H, substituent; R3, R4 = alkyl, alkenyl, cycloalkyl, aryl, arylalkyl; X1, X2 = H or water-sol. group such as ammonium, guanidinium, amino modified by linear polyoxyalkylene chain, carboxylate; at most 1 of X1 or X2 = H, at least 1 of X1 or X2 = cited functional groups), useful as ligands on transition-metal catalysts, preferably Rh, Ru, or Ir, for asym. synthesis, preferably asym. hydrogenation, are claimed. The substituents in the 4,4'-positions are chosen to ensure a better soly. in aq. phase. Thus, hydrogenation of MeCOCH2CO2Et in presence of dibromoruthenium catalysts contg. an (R)- or (S)-I (R1 = R2 = H, R3 = R4 = Ph, X1 = X2 = CH2N+H3 Br-; prepn. given) gave MeCH(OH)CH2CO2Et in 100% conversions and 97-100% ee in many cases.

IT 681234-83-3P 774583-52-7P

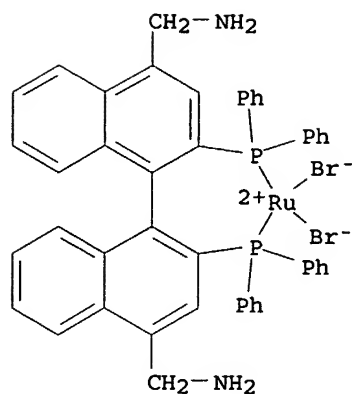
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of water-sol. chiral diphosphines and their transition-metal complexes, and use of the complexes as catalysts for asym. synthesis)

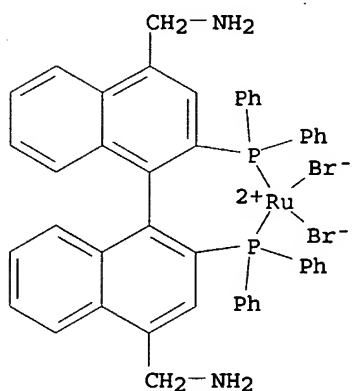
RN 681234-83-3 HCAPLUS

CN Ruthenium, [(1R)-2,2'-bis(diphenylphosphino-κP) [1,1'-binaphthalene]-4,4'-dimethanamine]dibromo-, dihydrobromide, (SP-4-2)- (9CI) (CA INDEX NAME)



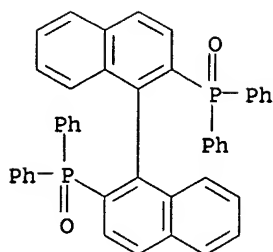
● 2 HBr

RN 774583-52-7 HCAPLUS
 CN Ruthenium, [(1S)-2,2'-bis(diphenylphosphino-κP)[1,1'-binaphthalene]-4,4'-dimethanamine]dibromo-, dihydrobromide, (SP-4-2)- (9CI) (CA INDEX NAME)

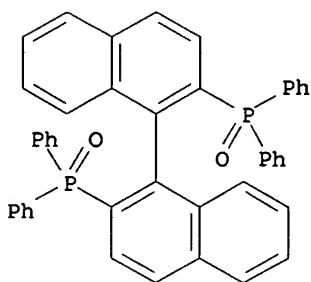


● 2 HBr

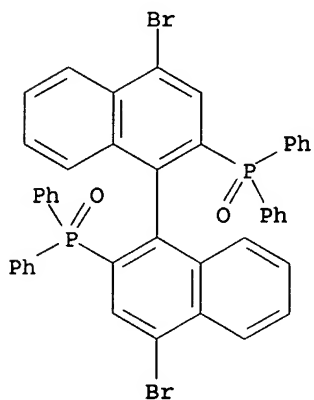
IT 94041-16-4P 94041-18-6P 328234-96-4P
 681244-35-9P 681244-39-3P 681244-43-9P
 681244-47-3P 681244-49-5P 709640-84-6P
 709640-85-7P 774583-43-6P 774583-54-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. of water-sol. chiral diphosphines and their
 transition-metal complexes, and use of the complexes as catalysts
 for asym. synthesis)
 RN 94041-16-4 HCAPLUS
 CN Phosphine oxide, (1R)-[1,1'-binaphthalene]-2,2'-diylbis[diphenyl-
 (9CI) (CA INDEX NAME)



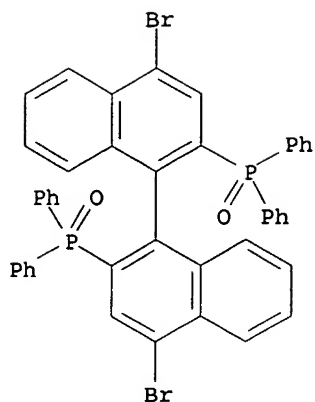
RN 94041-18-6 HCAPLUS
 CN Phosphine oxide, (1S)-[1,1'-binaphthalene]-2,2'-diylbis[diphenyl-
 (9CI) (CA INDEX NAME)



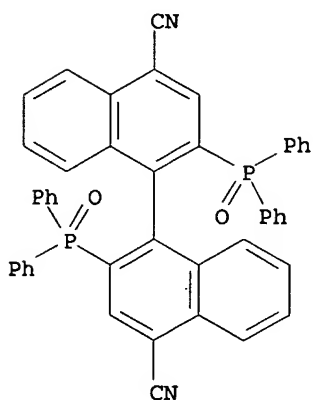
RN 328234-96-4 HCAPLUS
 CN Phosphine oxide, [(1R)-4,4'-dibromo[1,1'-binaphthalene]-2,2'-
 diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



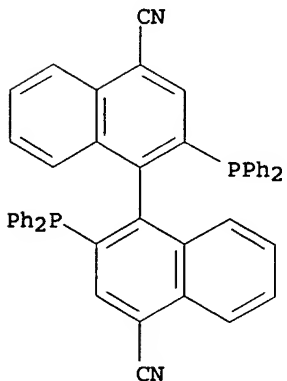
RN 681244-35-9 HCAPLUS
 CN Phosphine oxide, [(1S)-4,4'-dibromo[1,1'-binaphthalene]-2,2'-
 diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



RN 681244-39-3 HCAPLUS
 CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-
 bis(diphenylphosphino)-, (1S)- (9CI) (CA INDEX NAME)

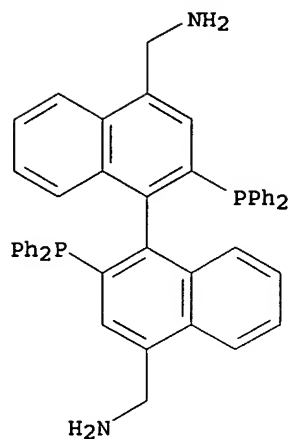


RN 681244-43-9 HCAPLUS
 CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-
 bis(diphenylphosphino)-, (1S)- (9CI) (CA INDEX NAME)



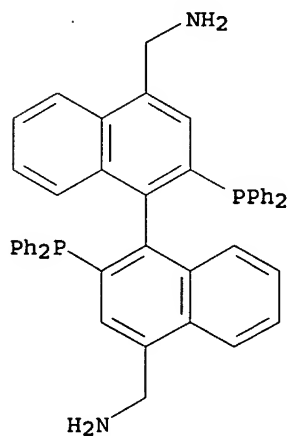
RN 681244-47-3 HCAPLUS
 CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-

, (1R) - (9CI) (CA INDEX NAME)



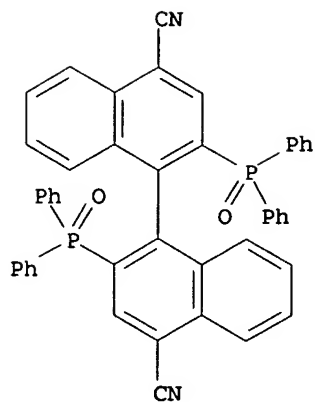
RN 681244-49-5 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-
, (1S) - (9CI) (CA INDEX NAME)

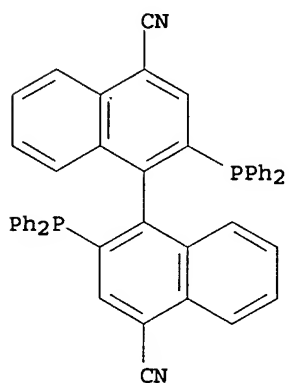


RN 709640-84-6 HCAPLUS

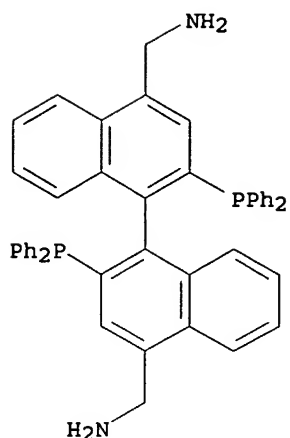
CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-
bis(diphenylphosphinyl)-, (1R) - (9CI) (CA INDEX NAME)



RN 709640-85-7 HCAPLUS
 CN [1,1'-Binaphthalene]-4,4'-dicarbonitrile, 2,2'-bis(diphenylphosphino)-, (1R)- (9CI) (CA INDEX NAME)



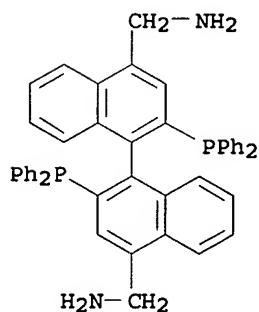
RN 774583-43-6 HCAPLUS
 CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-, dihydrobromide, (1S)- (9CI) (CA INDEX NAME)



● 2 HBr

RN 774583-54-9 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-, dihydrobromide (9CI) (CA INDEX NAME)



● 2 HBr

IC ICM C07F009-50

CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 21, 78

IT Amines, uses

RL: CAT (Catalyst use); USES (Uses)

(diamines, chiral, racemic; prepn. of water-sol. chiral diphosphines and their transition-metal complexes, and use of the complexes as catalysts for asym. synthesis)

IT Phosphines

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(diphosphines, complexation with transition metals; prepn. of water-sol. chiral diphosphines and their transition-metal complexes, and use of the complexes as catalysts for asym. synthesis)

IT Transition metal complexes

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(prepn. of water-sol. chiral diphosphines and their transition-metal complexes, and use of the complexes as catalysts for asym. synthesis)

IT 5700-60-7, 1,2-Diamino-1,2-diphenylethane
 RL: CAT (Catalyst use); USES (Uses)
 (chiral, racemic; prepn. of water-sol. chiral diphosphines and their transition-metal complexes, and use of the complexes as catalysts for asym. synthesis)

IT 681234-83-3P 774583-52-7P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of water-sol. chiral diphosphines and their transition-metal complexes, and use of the complexes as catalysts for asym. synthesis)

IT 94041-16-4P 94041-18-6P 328234-96-4P
 681244-35-9P 681244-39-3P 681244-43-9P
 681244-47-3P 681244-49-5P 709640-84-6P
 709640-85-7P 774583-43-6P 774583-54-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. of water-sol. chiral diphosphines and their transition-metal complexes, and use of the complexes as catalysts for asym. synthesis)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 9 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:722953 HCAPLUS

DOCUMENT NUMBER: 141:225689

TITLE: Ligands for metals and improved metal-catalyzed processes based thereon

INVENTOR(S): Buchwald, Stephen L.; Huang, Xiaohua; Zim, Danilo

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 99 pp., Cont.-in-part of U.S. Ser. No. 420,950.
 CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 5

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004171833	A1	20040902	US 2003-731702	20031209
US 6395916	B1	20020528	US 1998-113478	19980710
US 6307087	B1	20011023	US 1999-231315	19990113
US 2002156295	A1	20021024	US 2001-4101	20011023
US 7026498	B2	20060411		
US 2004010149	A1	20040115	US 2003-420950	20030422

US 6946560 B2 20050920 <--
 PRIORITY APPLN. INFO.: US 1998-113478 A2 199807
 10
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 US 1999-231315 A1 199901
 13
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 US 2001-4101 A3 200110
 23
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 US 2002-431870P P 200212
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 US 2003-451562P P 200303
 03
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 US 2003-420950 A2 200304
 22
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OTHER SOURCE(S): CASREACT 141:225689; MARPAT 141:225689

AB One aspect of the present invention relates to ligands for transition metals. A second aspect of the present invention relates to the use of catalysts comprising these ligands in transition metal-catalyzed carbon-heteroatom and carbon-carbon bond-forming reactions. The subject methods provide improvements in many features of the transition metal-catalyzed reactions, including the range of suitable substrates, reaction conditions, and efficiency. Thus, Pd₂(dba)₃/2-Me₂NC₆H₄C₆H₄PCy₃ catalyzed amination of 4-MeC₆H₄Cl with Bu₂NH in the presence of NaOBu-t in PhMe. gave 95% 4-MeC₆H₄NBu₂ whereas Suzuki coupling reaction of 4-MeC₆H₄Cl with PhB(OH)₂ gave 96% 4-MeC₆H₄Ph.

IT 213697-53-1P 213774-71-1P 224311-51-7P,
 2-(Di-tert-butylphosphino)biphenyl 224311-54-0P
 224311-55-1P 255835-81-5P 255835-82-6P
 255835-83-7P 255835-84-8P 255882-14-5P
 564483-18-7P

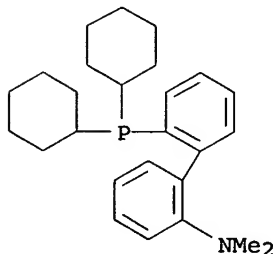
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of phosphine ligands for
 palladium catalyzed amination, Suzuki coupling, and other
 carbon-carbon bond formation processes)

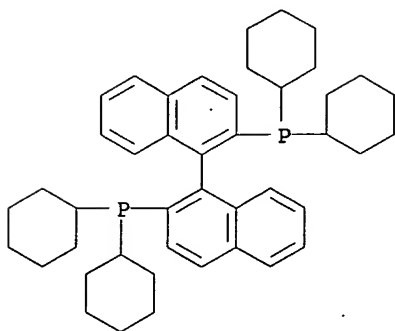
RN 213697-53-1 HCAPLUS

CN [1,1'-Biphenyl]-2-amine, 2'-(dicyclohexylphosphino)-N,N-dimethyl-
 (9CI) (CA INDEX NAME)

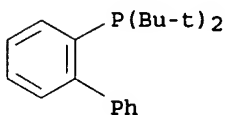


RN 213774-71-1 HCAPLUS

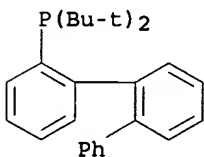
CN Phosphine, [1,1'-binaphthalene]-2,2'-diylbis[dicyclohexyl]- (9CI)
(CA INDEX NAME)



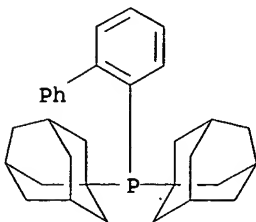
RN 224311-51-7 HCAPLUS
CN Phosphine, [1,1'-biphenyl]-2-ylbis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



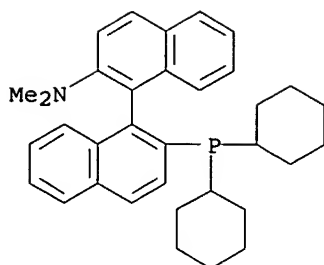
RN 224311-54-0 HCAPLUS
CN Phosphine, bis(1,1-dimethylethyl)[1,1':2',1''-terphenyl]-2-yl- (9CI)
(CA INDEX NAME)



RN 224311-55-1 HCAPLUS
CN Phosphine, [1,1'-biphenyl]-2-ylbis(tricyclo[3.3.1.1.3,7]dec-1-yl)- (9CI) (CA INDEX NAME)

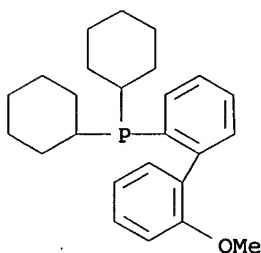


RN 255835-81-5 HCAPLUS
CN [1,1'-Binaphthalen]-2-amine, 2'-(dicyclohexylphosphino)-N,N-dimethyl- (9CI) (CA INDEX NAME)



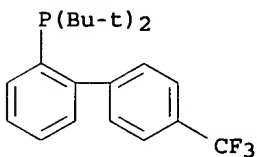
RN 255835-82-6 HCAPLUS

CN Phosphine, dicyclohexyl(2'-methoxy[1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)



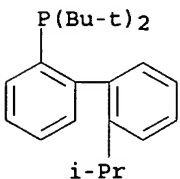
RN 255835-83-7 HCAPLUS

CN Phosphine, bis(1,1-dimethylethyl)(4'-(trifluoromethyl)[1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)



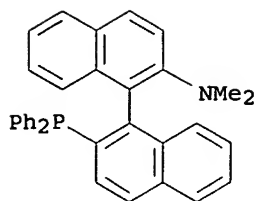
RN 255835-84-8 HCAPLUS

CN Phosphine, bis(1,1-dimethylethyl)(2'-(1-methylethyl)[1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)

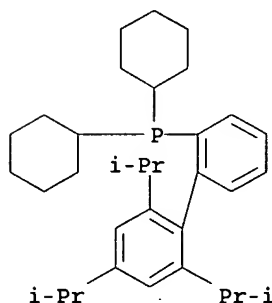


RN 255882-14-5 HCAPLUS

CN [1,1'-Binaphthalen]-2-amine, 2'-(diphenylphosphino)-N,N-dimethyl- (9CI) (CA INDEX NAME)



RN 564483-18-7 HCAPLUS
 CN Phosphine, dicyclohexyl[2',4',6'-tris(1-methylethyl)[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



IC ICM C07F009-02
 ICS C07F009-547
 INCL 546022000; 548413000; 556404000; 568009000
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 21
 IT 213697-53-1P 213774-71-1P 224311-51-7P,
 2-(Di-tert-butylphosphino)biphenyl 224311-54-0P
 224311-55-1P 255835-81-5P 255835-82-6P
 255835-83-7P 255835-84-8P 255835-85-9P
 255882-14-5P 564483-18-7P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of phosphine ligands for
 palladium catalyzed amination, Suzuki coupling, and other
 carbon-carbon bond formation processes)

L26 ANSWER 10 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:515555 HCAPLUS
 DOCUMENT NUMBER: 141:71718
 TITLE: Preparation of phosphine ligands for metals and improved metal-catalyzed processes based thereon
 INVENTOR(S): Buchwald, Stephen L.; Huang, Xiaohua; Zim, Danilo
 PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA
 SOURCE: PCT Int. Appl., 198 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 5
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004052939	A2	20040624	WO 2003-US38945	

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WO 2004052939 A3 20041216

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,
SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA,
ZM, ZWRW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE,
DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG

CA 2509522 AA 20040624 CA 2003-2509522

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AU 2003296326 A1 20040630 AU 2003-296326

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EP 1581467 A2 20051005 EP 2003-812849

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
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SK

CN 1745049 A 20060308 CN 2003-80109502

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JP 2006509046 T2 20060316 JP 2005-508499

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PRIORITY APPLN. INFO.: US 2002-431870P P

200212
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US 2003-451562P P

200303
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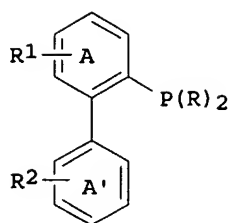
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WO 2003-US38945 W

200312
09

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OTHER SOURCE(S): CASREACT 141:71718; MARPAT 141:71718
GI



I

AB One aspect of the present invention relates to prepn. of ligands I (R = alkyl, cycloalkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, (CH₂)_m-R80, etc.; A, A' = biphenyl core independently may be (un)substituted with R1 and R2 resp., any no. of times up to limitations imposed by stability and rule of valence; R1, R2 = alkyl, cycloalkyl, aryl, heterocycloalkyl, heteroaryl, aralkyl, heteroaralkyl, organosilyl, (CH₂)_m-R80, etc.; R80 = (un)substituted aryl, cycloalkyl, cycloalkenyl, heterocycle, polycycle, etc.; m = 0-8) for transition metals. A second aspect of the present invention relates to the use of catalysts comprising these ligands in transition metal-catalyzed carbon-heteroatom and carbon-carbon bond-forming reactions. The subject methods provide improvements in many features of the transition metal-catalyzed reactions, including the range of suitable substrates, reaction conditions, and efficiency. Thus, tris(dibenzylideneacetone)dipalladium/2-Me₂NC₆H₄C₆H₄PCy₂-2 (Cy = cyclohexyl) catalyzed amination of 4-Me₆H₄NH₂ with 4-MeOC₆H₄Cl in the presence of NaOBu-t in PhMe at 80° gave 93% N-(4-methylphenyl)-p-anisidine.

IT 213697-53-1P 213774-71-1P 224311-51-7P
224311-52-8P 224311-54-0P 224311-55-1P
247940-06-3P 255835-81-5P 255835-82-6P
255835-83-7P 255835-84-8P 255882-14-5P
298205-47-7P 338800-02-5P 378787-28-1P
382602-22-4P 564483-18-7P 564483-19-8P
709667-71-0P 709667-72-1P 709667-73-2P
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709667-77-6P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

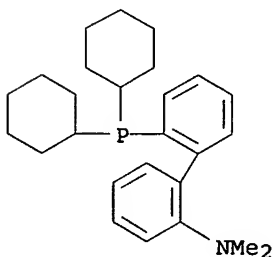
PREP (Preparation); USES (Uses)

(prepn. of phosphine ligands for

palladium-catalyzed carbon-carbon bond forming reactions)

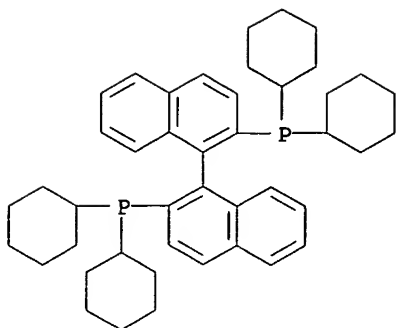
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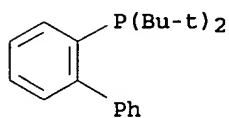


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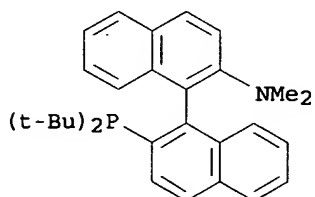
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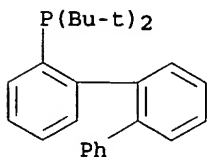
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 CN Phosphine, [1,1'-biphenyl]-2-ylbis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



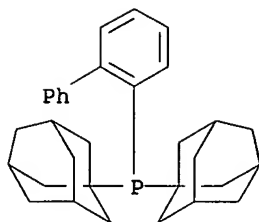
RN 224311-52-8 HCAPLUS
 CN [1,1'-Binaphthalen]-2-amine, 2'-[bis(1,1-dimethylethyl)phosphino]-N,N-dimethyl- (9CI) (CA INDEX NAME)



RN 224311-54-0 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl)[1,1':2',1''-terphenyl]-2-yl- (9CI) (CA INDEX NAME)

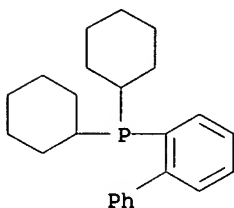


RN 224311-55-1 HCAPLUS
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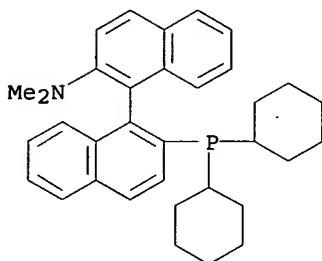
RN 247940-06-3 HCAPLUS

CN Phosphine, [1,1'-biphenyl]-2-ylidicyclohexyl- (9CI) (CA INDEX NAME)



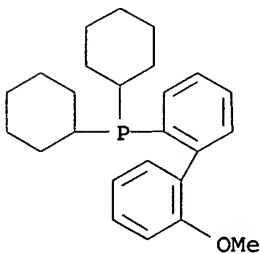
RN 255835-81-5 HCAPLUS

CN [1,1'-Binaphthalen]-2-amine, 2'-(dicyclohexylphosphino)-N,N-dimethyl- (9CI) (CA INDEX NAME)



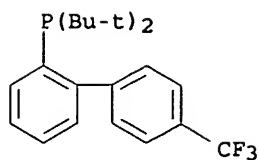
RN 255835-82-6 HCAPLUS

CN Phosphine, dicyclohexyl(2'-methoxy[1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)

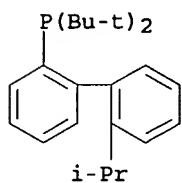


RN 255835-83-7 HCAPLUS

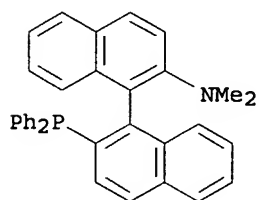
CN Phosphine, bis(1,1-dimethylethyl)[4'-(trifluoromethyl)[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



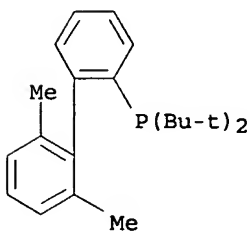
RN 255835-84-8 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl)[2'-(1-methylethyl)[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



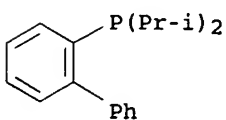
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 CN [1,1'-Binaphthalen]-2-amine, 2'-(diphenylphosphino)-N,N-dimethyl- (9CI) (CA INDEX NAME)



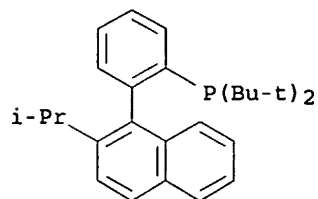
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 CN Phosphine, (2',6'-dimethyl[1,1'-biphenyl]-2-yl)bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



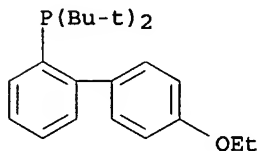
RN 338800-02-5 HCAPLUS
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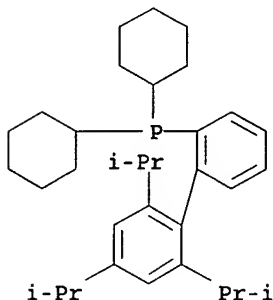
RN 378787-28-1 HCAPLUS
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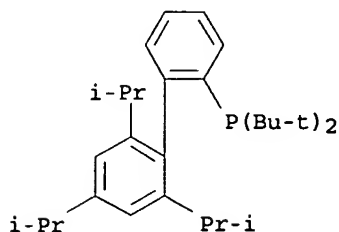
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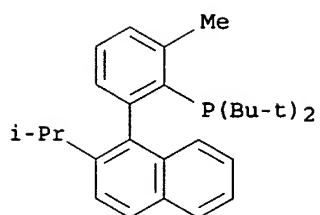
RN 564483-18-7 HCAPLUS
 CN Phosphine, dicyclohexyl[2',4',6'-tris(1-methylethyl)[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



RN 564483-19-8 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl)[2',4',6'-tris(1-methylethyl)[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)

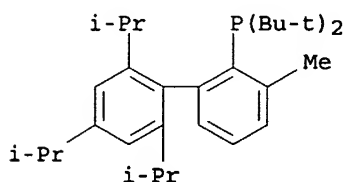


RN 709667-71-0 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl)[2-methyl-6-[2-(1-methylethyl)-1-naphthalenyl]phenyl]- (9CI) (CA INDEX NAME)



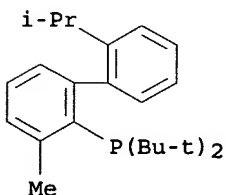
RN 709667-72-1 HCAPLUS

CN Phosphine, bis(1,1-dimethylethyl)[3-methyl-2',4',6'-tris(1-methylethyl)[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



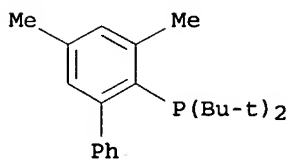
RN 709667-73-2 HCAPLUS

CN Phosphine, bis(1,1-dimethylethyl)[3-methyl-2'-(1-methylethyl)[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



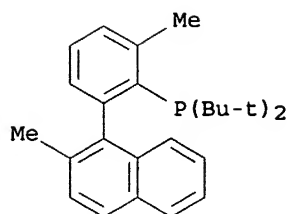
RN 709667-74-3 HCAPLUS

CN Phosphine, (3,5-dimethyl[1,1'-biphenyl]-2-yl)bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

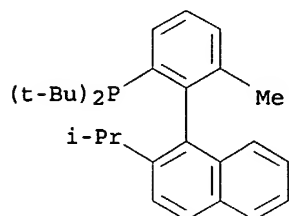


RN 709667-75-4 HCAPLUS

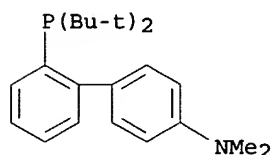
CN Phosphine, bis(1,1-dimethylethyl)[2-methyl-6-(2-methyl-1-naphthalenyl)phenyl]- (9CI) (CA INDEX NAME)



RN 709667-76-5 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl) [3-methyl-2-[2-(1-methylethyl)-1-naphthalenyl]phenyl]- (9CI) (CA INDEX NAME)



RN 709667-77-6 HCAPLUS
 CN [1,1'-Biphenyl]-4-amine, 2'-[bis(1,1-dimethylethyl)phosphino]-N,N-dimethyl- (9CI) (CA INDEX NAME)



IC ICM C08F
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 21
 IT 32673-25-9P 35823-26-8P 36297-54-8P 53098-11-6P 54000-83-8P
 173593-25-4P 213697-53-1P 213774-71-1P
 224311-51-7P 224311-52-8P 224311-54-0P
 224311-55-1P 226089-00-5P 247940-06-3P
 255835-81-5P 255835-82-6P 255835-83-7P
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 709667-78-7P 709667-79-8P 709667-80-1P 709667-81-2P
 709667-82-3P 709667-83-4P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of phosphine ligands for
 palladium-catalyzed carbon-carbon bond forming reactions)

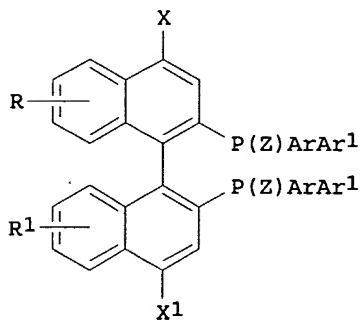
L26 ANSWER 11 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:515338 HCAPLUS
 DOCUMENT NUMBER: 141:71717
 TITLE: Chiral 4,4'-disubstituted binaphthyl

INVENTOR(S): diphosphines, their preparation, and their uses
as ligands in asymmetric hydrogenation catalysts
Lemaire, Marc; Saluzzo, Christine; Berthod,
Mikael
PATENT ASSIGNEE(S): Rhodia Chimie, Fr.; Centre National De La
Recherche Scientifique Cnrs
SOURCE: Fr. Demande, 41 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2849037	A1	20040625	FR 2002-16087	20021218

PRIORITY APPLN. INFO.: <--
FR 2002-16087
20021218

OTHER SOURCE(S): <--
CASREACT 141:71717; MARPAT 141:71717
GI



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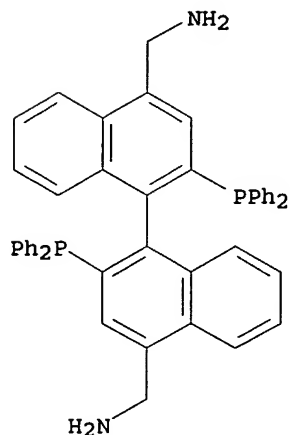
AB Racemic and optically active diphosphines I [Z = lone pair; R, R1 = H, C1-6 alkyl, C1-6 alkoxy, etc.; Ar, Ar1 = alkyl, alkenyl, cycloalkyl, aryl, aralkyl, preferably Ph; X, X1 = (un)substituted alkyl, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, OH, CN, CH2NH2, CO2H or esters, CH2OH, NHNH2, N3, Mg, Li, etc., preferably fluoro-substituted alkyl, CN, CH2NH2, CO2H] and bis(phosphine oxide)s I [Z = O; same R, R1, Ar, Ar1, X, X1] useful, in their optically active form, as ligands for ruthenium, rhodium or iridium catalysts in asym. org. synthesis and in particular for enantioselective hydrogenation of C:C or C:O double bonds, are claimed, as are processes for prepn. of I. In an example, treating 0.0235 mmol (S)- or (R)-I (Z = lone pair; R = R1 = H; Ar = Ar1 = Ph; X = X1 = CH2NH2; prepn. given) in 1 mL CH2Cl2 with 0.0235 mmol bis(2-methylallyl)(1,5-cyclooctadiene)ruthenium for 30 min, followed by evapn. of solvent and addn. of MeOH or EtOH solvent and Me or Et acetoacetate substrate with a substrate-to-catalyst ratio of 1000:1 and hydrogenation at 40 bar H2 at 50° for 15 h gave 100% conversions to the corresponding alc. with >99% ee, where the configuration of the alc. product depended on the chirality of I used.

IT 681244-47-3P 681244-49-5P
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)
 (prepn. of chiral 4,4'-disubstituted binaphthyl
 diphosphines, and their uses as ligands in
 asym. hydrogenation catalysts)

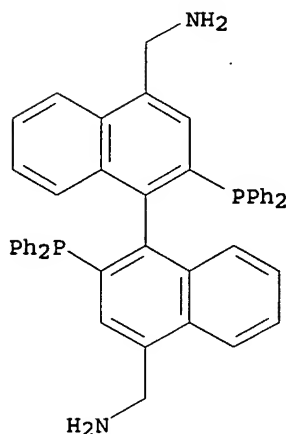
RN 681244-47-3 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-
 , (1R)- (9CI) (CA INDEX NAME)



RN 681244-49-5 HCAPLUS

CN [1,1'-Binaphthalene]-4,4'-dimethanamine, 2,2'-bis(diphenylphosphino)-
 , (1S)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50

ICS C07F009-53

CC 29-7 (Organometallic and Organometalloidal
 Compounds)

Section cross-reference(s): 21

IT 681244-47-3P 681244-49-5P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of chiral 4,4'-disubstituted binaphthyl
 diphosphines, and their uses as ligands in
 asym. hydrogenation catalysts)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L26 ANSWER 12 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:515337 HCAPLUS
 DOCUMENT NUMBER: 141:71716
 TITLE: Chiral 5,5'-disubstituted binaphthyl
 diphosphines, processes for their preparation,
 and their uses as ligands in asymmetric
 hydrogenation catalysts
 INVENTOR(S): Lemaire, Marc; Saluzzo, Christine; Berthod,
 Mikael
 PATENT ASSIGNEE(S): Rhodia Chimie, Fr.; Centre National De La
 Recherche Scientifique Cnrs
 SOURCE: Fr. Demande, 45 pp.
 CODEN: FRXXBL
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2849036	A1	20040625	FR 2002-16086	200212 18
FR 2849036	B1	20050520	<--	
CA 2509911	AA	20040708	CA 2003-2509911	200312 17
WO 2004056483	A1	20040708	WO 2003-FR3782	200312 17
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AU 2003299336	A1	20040714	AU 2003-299336	200312 17
CN 1738679	A	20060222	CN 2003-80109027	200312 17
EP 1633477	A1	20060315	EP 2003-799617	200312 17
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FR 2003-5255

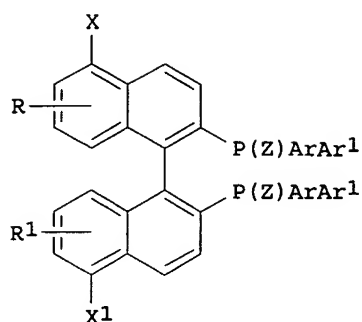
A

200304
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WO 2003-FR3782

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200312
17OTHER SOURCE(S):
GI

CASREACT 141:71716; MARPAT 141:71716



AB Racemic and optically active diphosphines I [Z = lone pair; R, R1 = H, C1-6 alkyl, C1-6 alkoxy; Ar, Ar1 = alkyl, alkenyl, cycloalkyl, aryl, aralkyl, preferably Ph; X, X1 = (un)substituted alkyl, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, Br, Cl, iodo, OH, CN, CH2NH2, CO2H or esters, CH2OH, NHNH2, N3, Mg, Li, etc.] and bis(phosphine oxide)s I [Z = O; same R, R1, Ar, Ar1; X, X1 = Cl, Br, iodo] useful, in their optically active form, as ligands for ruthenium, rhodium or iridium catalysts in asym. org. synthesis and in particular for enantioselective hydrogenation of C:C or C:O double bonds, are claimed, as are processes for prepn. of I. In an example, treating 0.0235 mmol (S)- or (R)-I (Z = lone pair; R = R1 = H; Ar = Ar1 = Ph; X = X1 = CH2NH2; prepn. given) in 1 mL CH2Cl2 with 0.0235 mmol bis(2-methylallyl)(1,5-cyclooctadiene)ruthenium for 30 min, followed by evapn. of solvent and addn. of MeOH or EtOH solvent and Me or Et acetoacetate substrate with a substrate-to-catalyst ratio of 1000:1 and hydrogenation at 40 bar H2 at 50° for 15 h gave 100% conversions to the corresponding alc. with >99% ee, where the configuration of the alc. product depended on the chirality of I used.

IT 681244-51-9P 709640-82-4P

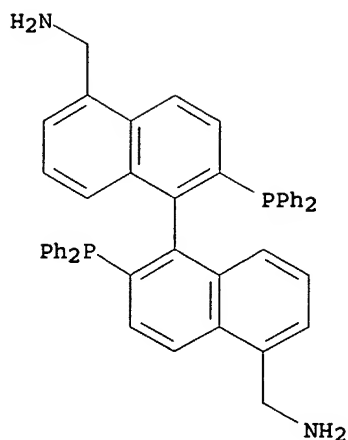
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

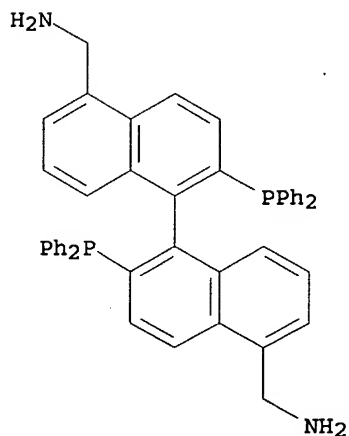
(prepn. of chiral binaphthyl diphosphines,
and their uses as ligands in asym. hydrogenation
catalysts)

RN 681244-51-9 HCAPLUS

CN [1,1'-Binaphthalene]-5,5'-dimethanamine, 2,2'-bis(diphenylphosphino)-
, (1R)- (9CI) (CA INDEX NAME)



RN 709640-82-4 HCAPLUS
 CN [1,1'-Binaphthalene]-5,5'-dimethanamine, 2,2'-bis(diphenylphosphino)-
 , (1S)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
 ICS B01J031-24; C07F015-00
 CC 29-7 (Organometallic and Organometalloidal
 Compounds)
 Section cross-reference(s): 21
 IT 681244-51-9P 709640-82-4P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of chiral binaphthyl diphosphines,
 and their uses as ligands in asym. hydrogenation
 catalysts)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L26 ANSWER 13 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:493713 HCAPLUS
 DOCUMENT NUMBER: 141:63880
 TITLE: Asymmetric synthesis using
 transition metal complex
 having diphosphine complex as
 ligand

INVENTOR(S): Goto, Mitsutaka; Yamano, Mitsuhisa; Kawaguchi, Shinji
 PATENT ASSIGNEE(S): Takeda Chemical Industries, Ltd., Japan
 SOURCE: PCT Int. Appl., 41 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004050667	A1	20040617	WO 2003-JP15536	20031204
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003289177	A1	20040623	AU 2003-289177	20031204
JP 2004196793	A2	20040715	JP 2003-406173	20031204
EP 1568701	A1	20050831	EP 2003-777248	20031204
CN 1720252	A	20060111	CN 2003-80105194	20031204
US 2006094887	A1	20060504	US 2005-536731	20050527
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRIORITY APPLN. INFO.: JP 2002-354341 A 20021205 WO 2003-JP15536 W 20031204				

OTHER SOURCE(S): MARPAT 141:63880

AB A transition metal complex having 2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-binaphthyl as a ligand is used for asym. synthesis, in particular asym. hydrogenation of β -oxoalkanoic acid esters of formula $R_1COCH(R)CO_2R_2$ [R = halo, each (un)substituted alkylsulfonyl or arylsulfonyl; R₁ = each

(un)substituted hydrocarbyl or heterocyclyl; R2 = (un)substituted hydrocarbyl] to chiral β -hydroxy alkanolic acid esters of formula $R1C^*H(OH)CH(R)CO_2R2$ (R-R2 = same as above; * denotes an asym. carbon atom). The presence of the transition metal complex in the reaction system of an asym. reaction system allows the prepn. of an objective compd. having an objective abs. configuration with improved efficiency. Thus, 12.66 mg (S)-2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-biphenyl was added to a soln. of 4.27 mg Rh(cod)2OTf in 1 mL MeOH and stirred at room temp. for 30 min to give a soln. of ruthenium complex which was added to a soln. of 0.10 g Me (Z)- α -acetamidocinnamate in 4 mL MeOH and hydrogenated under 1.0 MPa H pressure at 25° for 24 h to give Me (R)-3-phenyl-2-acetamidopropanoate with >99.9% conversion and 91.4% ee.

IT 704913-96-2P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

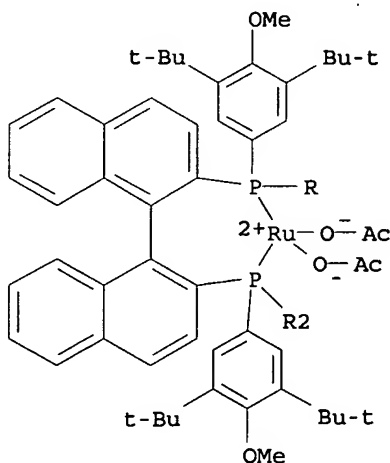
PREP (Preparation); USES (Uses)

(catalyst for asym. hydrogenation or Heck arylation; asym. synthesis using transition metal complex having diphosphine complex as ligand)

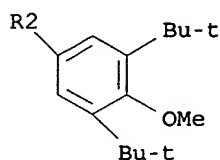
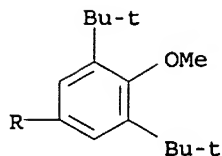
RN 704913-96-2 HCAPLUS

CN Ruthenium, bis(acetato- κO) [(1S)-[1,1'-binaphthalene]-2,2'-diylbis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphine- κP]]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IT 132071-87-5P

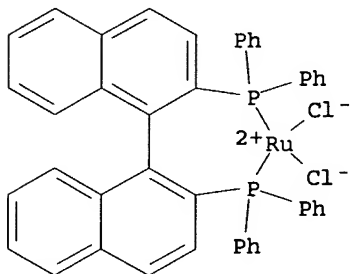
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(catalyst for asym. hydrogenation; asym. **synthesis**
using **transition metal** complex having
diphosphine complex as **ligand**)

RN 132071-87-5 HCAPLUS

CN Ruthenium, [(1R)-[1,1'-binaphthalene]-2,2'-diylbis[diphenylphosphine-
κP]]dichloro-, (SP-4-2)- (9CI) (CA INDEX NAME)



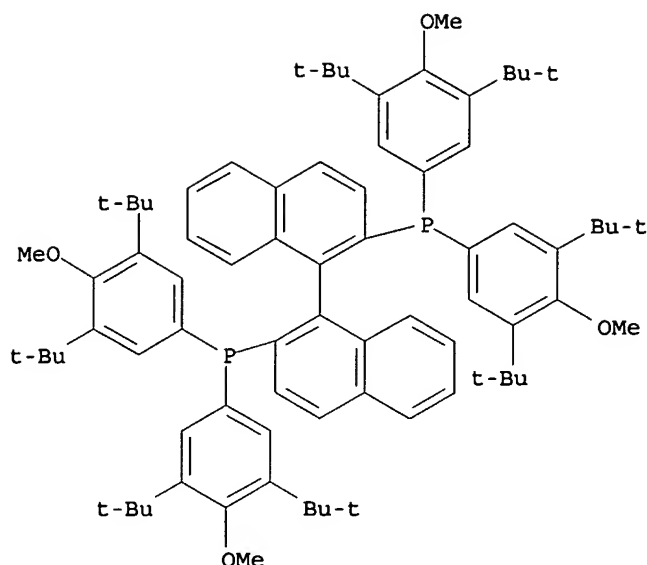
IT 541502-07-2P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic
preparation); PREP (Preparation); RACT (Reactant or
reagent); USES (Uses)

(catalyst **ligand** for asym. hydrogenation or Heck
arylation; asym. **synthesis** using **transition**
metal complex having **diphosphine** complex as
ligand)

RN 541502-07-2 HCAPLUS

CN Phosphine, (1S)-[1,1'-binaphthalene]-2,2'-diylbis[bis[3,5-bis(1,1-
dimethylethyl)-4-methoxyphenyl]- (9CI) (CA INDEX NAME)



- IC ICM C07F009-50
ICS C07F015-00; C07D301-26; C07D303-40; C07D307-28; C07C231-18;
C07C233-47; C07M007-00
- CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 29
- IT Carbonates, reactions
RL: RGT (Reagent); RACT (Reactant or reagent)
(alkali metal; asym. **synthesis** using
transition metal complex having
diphosphine complex as ligand)
- IT Asymmetric **synthesis** and induction
(asym. **synthesis** using **transition**
metal complex having **diphosphine** complex as
ligand)
- IT **Transition metal** complexes
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(asym. **synthesis** using **transition**
metal complex having **diphosphine** complex as
ligand)
- IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(asym. **synthesis** using **transition**
metal complex having **diphosphine** complex as
ligand)
- IT Carboxylic acids, **preparation**
RL: SPN (Synthetic preparation); PREP (Preparation)
(hydroxy, asym. hydrogenation of β -oxoalkanoic acids to
 β -hydroxyalkanoic acids; asym. **synthesis** using
transition metal complex having
diphosphine complex as ligand)
- IT Carboxylic acids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxo, asym. hydrogenation of β -oxoalkanoic acids; asym.
synthesis using **transition metal**
complex having **diphosphine** complex as ligand)
- IT Arylation
Arylation catalysts
(stereoselective Heck arylation; asym. **synthesis** using
transition metal complex having
diphosphine complex as ligand)

- IT Hydrogenation
Hydrogenation catalysts
(stereoselective; asym. **synthesis** using
transition metal complex having
diphosphine complex as ligand)
- IT 7439-88-5D, Iridium, complex with 2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-binaphthyl 7440-02-0D, Nickel, complex with 2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-binaphthyl 7440-05-3D, Palladium, complex with 2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-binaphthyl 7440-16-6D, Rhodium, complex with 2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-binaphthyl 7440-18-8D, Ruthenium, complex with 2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-binaphthyl 7440-50-8D, Copper, complex with 2,2'-bis[bis(3,5-di-tert-butyl-4-methoxyphenyl)phosphino]-1,1'-binaphthyl 541502-07-2D, complex with transition metal
RL: CAT (Catalyst use); USES (Uses)
(asym. **synthesis** using transition metal complex having diphosphine complex as ligand)
- IT 358-23-6, Trifluoromethanesulfonic anhydride 616-42-2, Dimethyl sulfite 762-04-9, Diethyl phosphite 1139-52-2, 4-Bromo-2,6-di-tert-butylphenol 1191-99-7, 2,3-Dihydrofuran 16940-66-2, Sodium borohydride 17763-67-6, Phenyl trifluoromethanesulfonate 18531-99-2, (S)-1,1'-Binaphthol 41381-97-9, 2-Chloro-3-oxo-3-phenylpropionic acid ethyl ester 60676-51-9, Methyl (Z)- α -acetamidocinnamate
RL: RCT (Reactant); RACT (Reactant or reagent)
(asym. **synthesis** using transition metal complex having diphosphine complex as ligand)
- IT 1516-96-7P, 4-Bromo-2,6-di-tert-butylanisole 128544-05-8P 146452-40-6P 535925-40-7P 540731-05-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(asym. **synthesis** using transition metal complex having diphosphine complex as ligand)
- IT 21156-62-7P 126060-73-9P 191427-03-9P
RL: SPN (Synthetic preparation); PREP (Preparation)
(asym. **synthesis** using transition metal complex having diphosphine complex as ligand)
- IT 37366-09-9 99326-34-8, Bis(cyclooctadiene)rhodium triflate 704913-97-3 704913-99-5
RL: CAT (Catalyst use); USES (Uses)
(catalyst for asym. hydrogenation or Heck arylation; asym. **synthesis** using transition metal complex having diphosphine complex as ligand)
- IT 704913-96-2P
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(catalyst for asym. hydrogenation or Heck arylation; asym. **synthesis** using transition metal complex having diphosphine complex as ligand)
- IT 12289-94-0 50982-12-2 76189-55-4 705281-18-1
RL: CAT (Catalyst use); USES (Uses)
(catalyst for asym. hydrogenation; asym. **synthesis** using transition metal complex having diphosphine complex as ligand)
- IT 132071-87-5P
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(catalyst for asym. hydrogenation; asym. **synthesis**

using transition metal complex having
diphosphine complex as ligand)

IT 14647-23-5, [1,2-Bis(diphenylphosphino)ethane]dichloronickel
RL: CAT (Catalyst use); USES (Uses)
(catalyst for coupling reaction; asym. synthesis using
transition metal complex having
diphosphine complex as ligand)

IT 541502-07-2P
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic
preparation); PREP (Preparation); RACT (Reactant or
reagent); USES (Uses)
(catalyst ligand for asym. hydrogenation or Heck
arylation; asym. synthesis using transition
metal complex having diphosphine complex as
ligand)

IT 76189-56-5, (S)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl
RL: CAT (Catalyst use); USES (Uses)
(catalyst ligand for asym. hydrogenation; asym.
synthesis using transition metal
complex having diphosphine complex as ligand)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L26 ANSWER 14 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:370971 HCAPLUS
DOCUMENT NUMBER: 140:375681
TITLE: Late transition metal catalysts for olefin
oligomerizations
INVENTOR(S): Zhao, Baiyi; Kacker, Smita; Canich, Jo Ann M.
PATENT ASSIGNEE(S): Exxonmobil Chemical Patents Inc., USA
SOURCE: PCT Int. Appl., 58 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004037869	A2	20040506	WO 2003-US33974	200310 24

WO 2004037869 A3 20040910

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,
SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG

AU 2003287220	A1	20040513	AU 2003-287220	200310 24
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US 2004138056	A1	20040715	US 2003-693584	200310 24
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US 2005003955

A1

20050106

US 2003-692827

200310
24

PRIORITY APPLN. INFO.:

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US 2002-421359P

P

200210
25<--
US 2002-421486P

P

200210
25<--
WO 2003-US33974

W

200310
24

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OTHER SOURCE(S): MARPAT 140:375681

AB A compn. of matter useful as catalysts for oligomerization of olefins comprises: (a) a Group 8, 9, or 10 **transition metal**, M; (b) an ancillary **ligand** comprising: (i) a terminal amine comprising two independently selected hydrocarbyl radicals, R1 and R2; (ii) a terminal **phosphine** comprising two independently selected hydrocarbyl radicals, R3 and R4; and (iii) a hydrocarbyl bridge, Y, comprising a backbone wherein the hydrocarbyl bridge connects between the terminal amine and the terminal **phosphine** and wherein the backbone comprises a chain that is four or more carbon atoms long; and (c) an abstractable **ligand**, X. The catalysts demonstrate high activity and selectivity for linear α -olefins.

2-(N,N-Dimethylamino)-2'-(dicyclohexylphosphino)biphenyl nickel dibromide was **prepd.** and used with Me aluminoxane in oligomerization of ethylene. The catalysts demonstrate high activity and selectivity for linear α -olefins.

IT 685517-31-1P 685517-32-2P 685517-33-3P

RL: CAT (Catalyst use); IMF (Industrial manufacture);

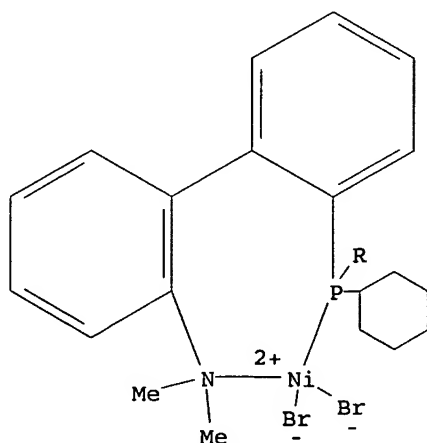
PREP (Preparation); USES (Uses)

(late transition metal catalysts for olefin oligomerizations)

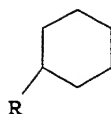
RN 685517-31-1 HCAPLUS

CN Nickel, dibromo[2'-(dicyclohexylphosphino- κ P)-N,N-dimethyl[1,1'-biphenyl]-2-amine- κ N]-, (T-4)- (9CI) (CA INDEX NAME)

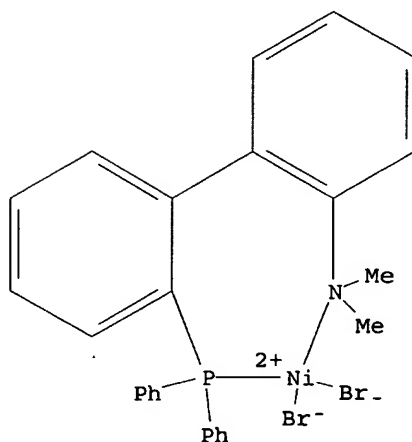
PAGE 1-A



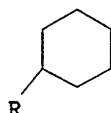
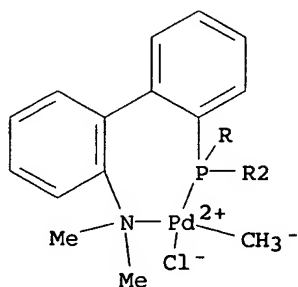
PAGE 2-A



RN 685517-32-2 HCAPLUS
 CN Nickel, dibromo[2'-(diphenylphosphino-κP)-N,N-dimethyl[1,1'-biphenyl]-2-amine-κN]-, (T-4)- (9CI) (CA INDEX NAME)

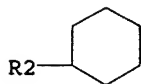


RN 685517-33-3 HCAPLUS
 CN Palladium, chloro[2'-(dicyclohexylphosphino-κP)-N,N-dimethyl[1,1'-biphenyl]-2-amine-κN]methyl- (9CI) (CA INDEX NAME)



PAGE 1-A

PAGE 2-A



IC ICM C08F004-00
 CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 29, 78
 IT Aluminoxanes
 RL: CAT (Catalyst use); USES (Uses)
 (Me; late transition metal catalysts for olefin oligomerizations)
 IT 685517-31-1P 685517-32-2P 685517-33-3P
 RL: CAT (Catalyst use); IMF (Industrial manufacture);
 PREP (Preparation); USES (Uses)
 (late transition metal catalysts for olefin oligomerizations)

L26 ANSWER 15 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:370941 HCAPLUS

DOCUMENT NUMBER: 140:375679

TITLE: Late transition metal catalysts for olefin oligomerizations

INVENTOR(S): Zhao, Baiyi; Kacker, Smita; Canich, Jo Ann M.

PATENT ASSIGNEE(S): Exxonmobil Chemical Patents Inc., USA

SOURCE: PCT Int. Appl., 55 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004037837	A1	20040506	WO 2003-US33970	20031024

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003284160	A1	20040513	AU 2003-284160	20031024
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US 2004138056	A1	20040715	US 2003-693584	20031024
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US 2005003955	A1	20050106	US 2003-692827	20031024
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PRIORITY APPLN. INFO.:	US 2002-421359P	P	200210
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25

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US 2002-421486P P

200210
25

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WO 2003-US33970 W

200310
24

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OTHER SOURCE(S): MARPAT 140:375679

AB A compn. of matter useful as catalysts for oligomerization of olefins comprises: (a) a Group 8, 9, or 10 **transition metal**, M, excluding palladium; (b) an ancillary **ligand** comprising: (i) a terminal amine comprising two independently selected hydrocarbyl radicals, R1 and R2; (ii) a terminal **phosphine** comprising two independently selected hydrocarbyl radicals, R3 and R4; and (iii) a hydrocarbyl bridge, Y, comprising a backbone wherein the hydrocarbyl bridge connects between the terminal amine and the terminal **phosphine** and wherein the backbone comprises a chain that is four or more carbon atoms long; and (c) an abstractable **ligand**, X. The catalysts demonstrate high activity and selectivity for linear α -olefins. 2-(N,N-Dimethylamino)-2'-(dicyclohexylphosphino)biphenyl nickel dibromide was **prepd** and used with Me aluminoxane in oligomerization of ethylene.

IT 685517-31-1P 685517-32-2P

RL: CAT (Catalyst use); IMF (Industrial manufacture);

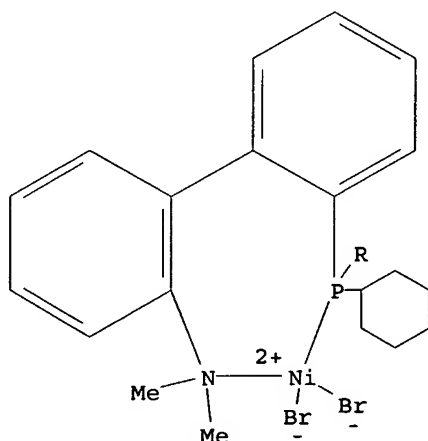
PREP (Preparation); USES (Uses)

(late transition metal catalysts for olefin oligomerizations)

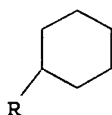
RN 685517-31-1 HCAPLUS

CN Nickel, dibromo[2'-(dicyclohexylphosphino- κ P)-N,N-dimethyl[1,1'-biphenyl]-2-amine- κ N]-, (T-4)- (9CI) (CA INDEX NAME)

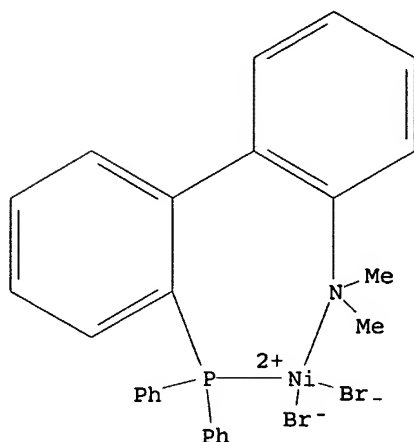
PAGE 1-A



PAGE 2-A

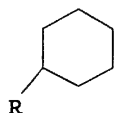
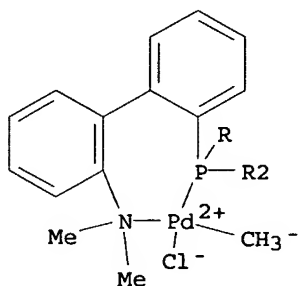


RN 685517-32-2 HCAPLUS
 CN Nickel, dibromo[2'-(diphenylphosphino-κP)-N,N-dimethyl[1,1'-biphenyl]-2-amine-κN]-, (T-4)- (9CI) (CA INDEX NAME)

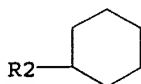


IT 685517-33-3P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (late transition metal catalysts for olefin oligomerizations)
 RN 685517-33-3 HCAPLUS
 CN Palladium, chloro[2'-(dicyclohexylphosphino-κP)-N,N-dimethyl[1,1'-biphenyl]-2-amine-κN]methyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07F015-00
 ICS C07F015-02; C07F015-04; C07F015-06; C08F010-00; C08F004-00;
 C08F002-00

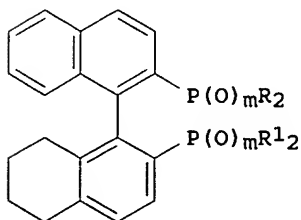
CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 29, 67, 78
 IT Aluminoxanes
 RL: CAT (Catalyst use); USES (Uses)
 (Me; late transition metal catalysts for olefin oligomerizations)
 IT Transition metal complexes
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (late transition metal catalysts for olefin oligomerizations)
 IT 685517-31-1P 685517-32-2P
 RL: CAT (Catalyst use); IMF (Industrial manufacture);
 PREP (Preparation); USES (Uses)
 (late transition metal catalysts for olefin oligomerizations)
 IT 685517-33-3P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (late transition metal catalysts for olefin oligomerizations)

L26 ANSWER 16 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:643167 HCAPLUS
 DOCUMENT NUMBER: 139:164886
 TITLE: Preparation of chiral diphosphine ligands with
 non-C2 symmetry axis and their application
 INVENTOR(S): Ding, Kuiling; Shen, Xiaoqiang
 PATENT ASSIGNEE(S): Shanghai Inst. of Organic Chemistry, Chinese
 Academy of Sciences, Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 24
 pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
----- CN 1356333	A	20020703	CN 2001-139085	200112 07

PRIORITY APPLN. INFO.: <--
 CN 2001-139085
 200112
 07

OTHER SOURCE(S): <--
 CASREACT 139:164886; MARPAT 139:164886
 GI



AB The diphosphine ligands I (R, R1 = Ph, substituted Ph, alkyl, cycloalkyl, 1-naphthyl, 2-naphthyl; m = 0, 1) are prepd. by esterifying (S)- or (R)-5,6,7,8-tetrahydro-1,1'-binaphthol with trifluoromethanesulfonic anhydride (at a molar ratio of 1:2-4) in polar solvent in the presence of org. amine at (-100)-25° for 1-8 h; coupling with R2PHO (at a molar ratio

of 1:1-4) in org. solvent in the presence of **transition metal-phosphine ligand complex catalyst** at 60-130° for 2-30 h to obtain 5',6',7',8'-tetrahydro-2'-[di(R)-phosphinyl]-1,1'-binaphthyl-2-yl trifluoromethanesulfonate; reducing with Cl₃SiH (at a molar ratio of 1:2-20) in org. solvent in the presence of org. amine at 70-140° for 8-25 h to obtain 5',6',7',8'-tetrahydro-2'-[di(R)-phosphino]-1,1'-binaphthyl-2-yl trifluoromethanesulfonate; coupling again with R12PHO at 60-130° for 2-20 h; and reducing again with Cl₃SiH. The **diphosphine ligand** may be used to **prep.** the catalyst for **asym. catalytic hydrogenation**. Acetophenone was **asym. reduced** by hydrogenation using the catalyst.

IT 575458-74-1P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

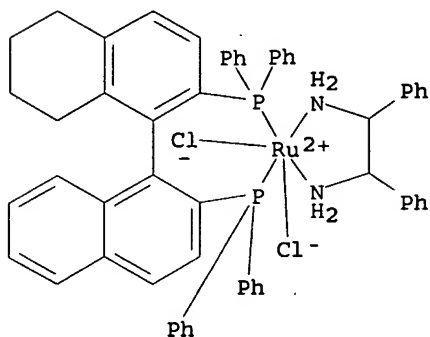
PREP (Preparation); USES (Uses)

(prepn. of chiral diphosphine ligands

with non-C2 symmetry axis and their application)

RN 575458-74-1 HCAPLUS

CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine-κN,κN'][[[(1R)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[diphenylphosphine-κP]]-], (OC-6-14)- (9CI) (CA INDEX NAME)



IT 575458-45-6P 575458-46-7P 575458-47-8P

575458-48-9P 575458-49-0P 575458-50-3P

575458-51-4P 575458-52-5P 575458-53-6P

575458-54-7P 575458-55-8P 575458-56-9P

575458-57-0P 575458-58-1P 575458-59-2P

575458-60-5P 575458-61-6P 575458-62-7P

575458-70-7P 575458-71-8P 575458-72-9P

575458-73-0P

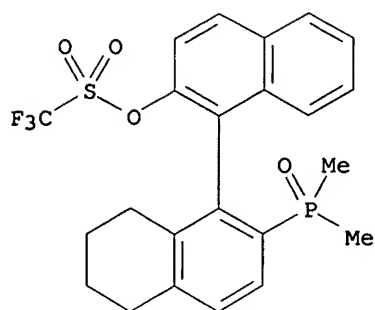
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

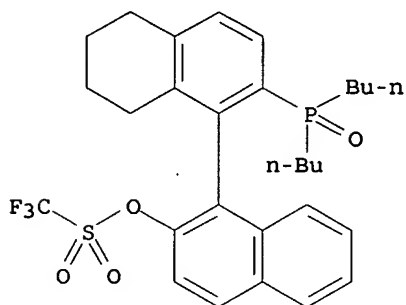
(prepn. of chiral diphosphine ligands with non-C2 symmetry axis and their application)

RN 575458-45-6 HCAPLUS

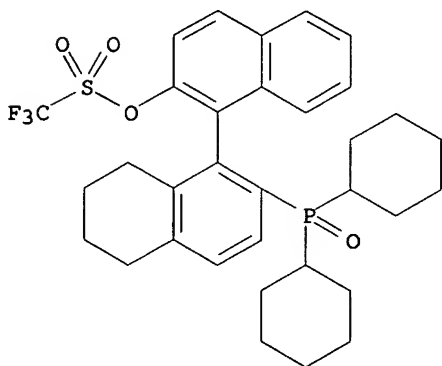
CN Methanesulfonic acid, trifluoro-, (1S)-2'-(dimethylphosphinyl)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



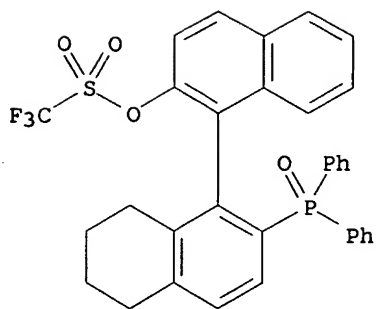
RN 575458-46-7 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-(dibutylphosphinyl)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



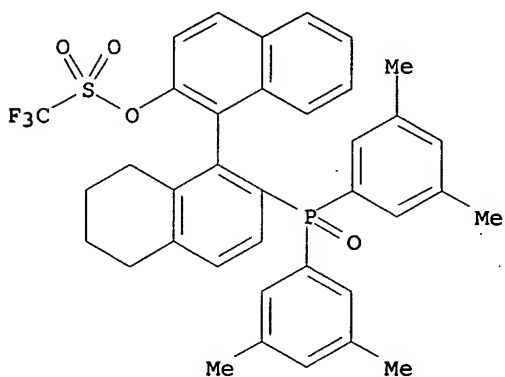
RN 575458-47-8 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-(dicyclohexylphosphinyl)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



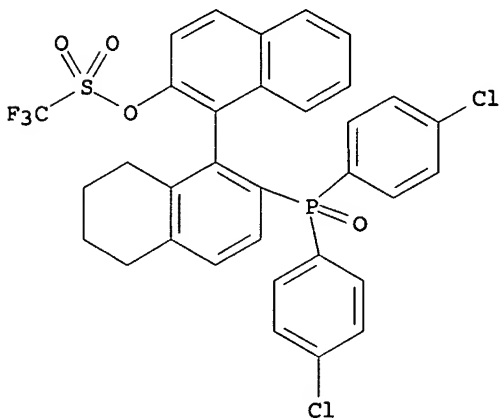
RN 575458-48-9 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-(diphenylphosphinyl)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



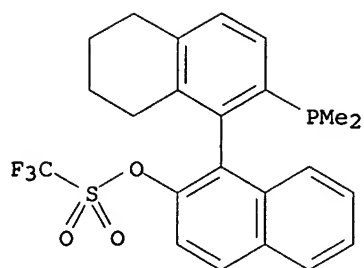
RN 575458-49-0 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-[bis(3,5-dimethylphenyl)phosphinyl]-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



RN 575458-50-3 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-[bis(4-chlorophenyl)phosphinyl]-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)

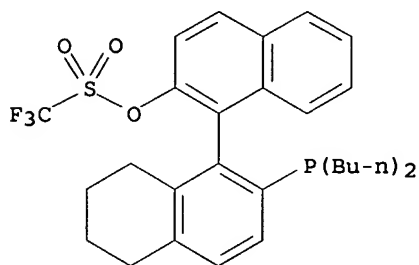


RN 575458-51-4 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-(dimethylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



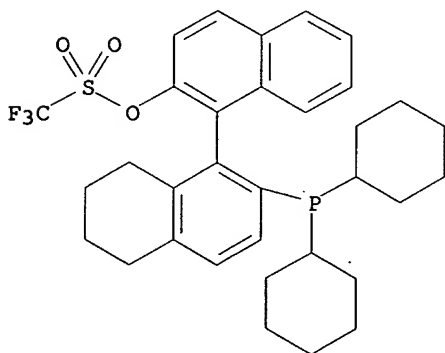
RN 575458-52-5 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1S)-2'-(dibutylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



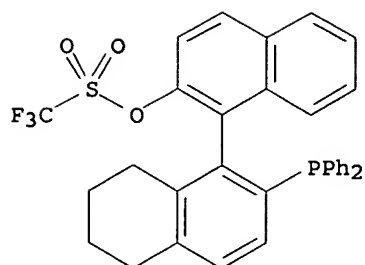
RN 575458-53-6 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1S)-2'-(dicyclohexylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



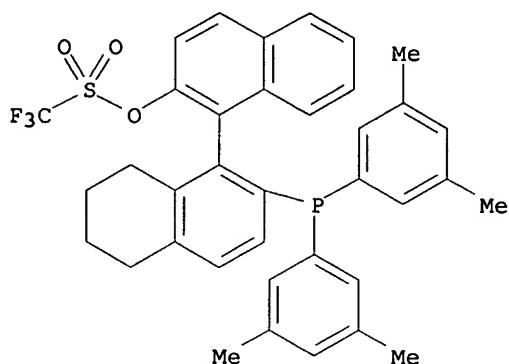
RN 575458-54-7 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1S)-2'-(diphenylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



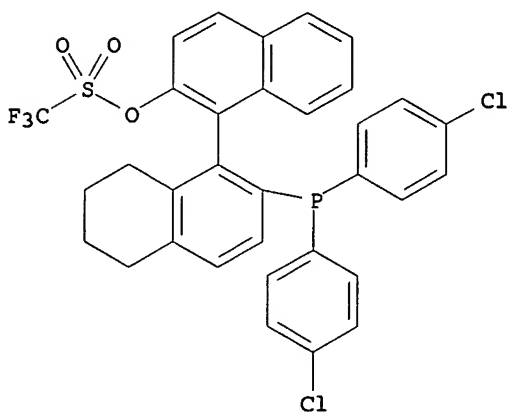
RN 575458-55-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1S)-2'-[bis(3,5-dimethylphenyl)phosphino]-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



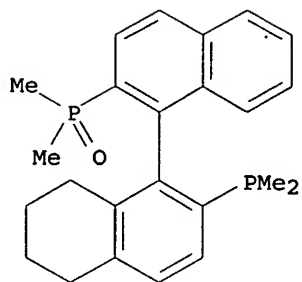
RN 575458-56-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1S)-2'-[bis(4-chlorophenyl)phosphino]-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



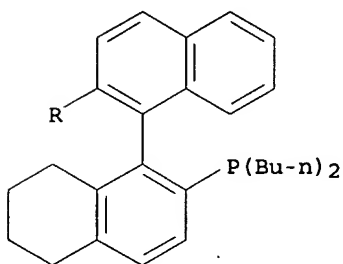
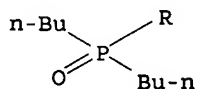
RN 575458-57-0 HCAPLUS

CN Phosphine oxide, [(1S)-2'-(dimethylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl]dimethyl- (9CI) (CA INDEX NAME)



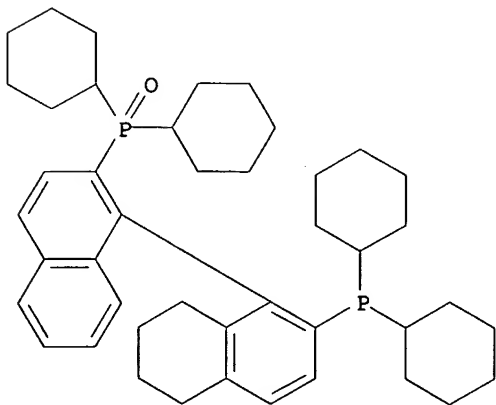
RN 575458-58-1 HCAPLUS

CN Phosphine oxide, dibutyl[(1S)-2'-(dibutylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl]- (9CI) (CA INDEX NAME)



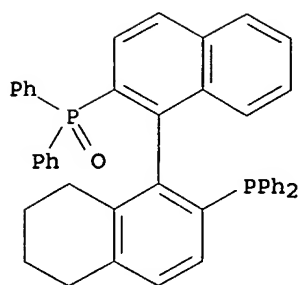
RN 575458-59-2 HCAPLUS

CN Phosphine oxide, dicyclohexyl[(1S)-2'-(dicyclohexylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl]- (9CI) (CA INDEX NAME)

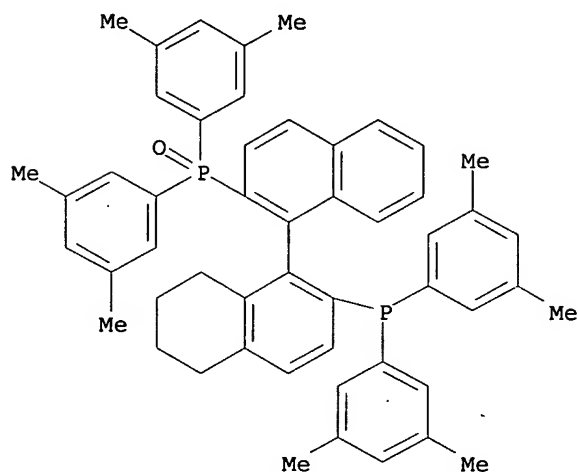


RN 575458-60-5 HCAPLUS

CN Phosphine oxide, [(1S)-2'-(diphenylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl]diphenyl- (9CI) (CA INDEX NAME)

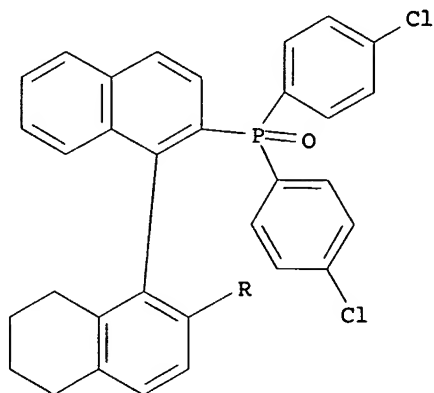


RN 575458-61-6 HCAPLUS
 CN Phosphine oxide, [(1S)-2'-[bis(3,5-dimethylphenyl)phosphino]-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl]bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)

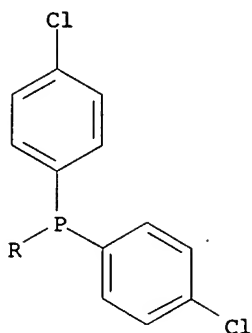


RN 575458-62-7 HCAPLUS
 CN Phosphine oxide, [(1S)-2'-[bis(4-chlorophenyl)phosphino]-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl]bis(4-chlorophenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

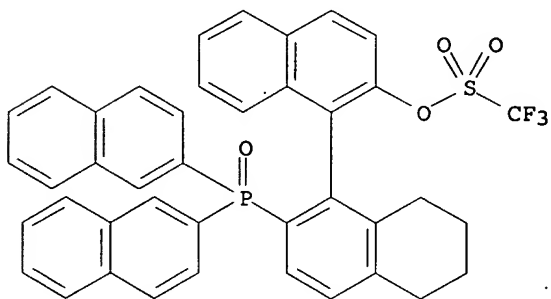


PAGE 2-A



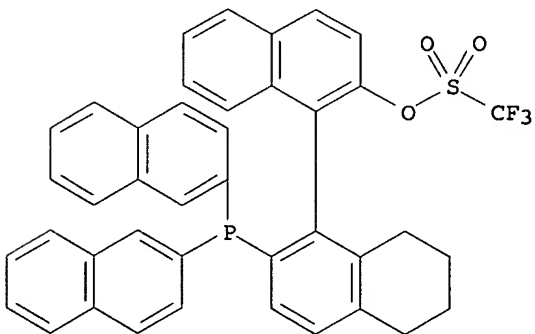
RN 575458-70-7 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(di-2-naphthalenylphosphinyl)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



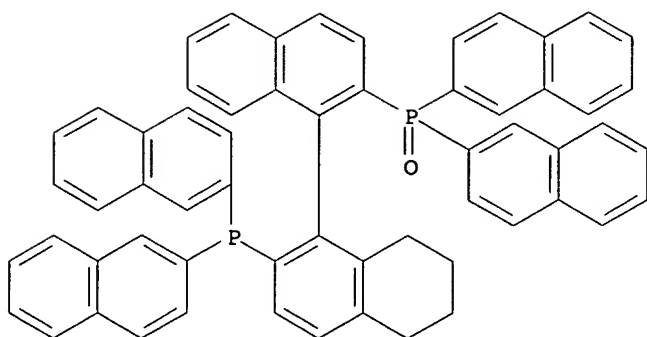
RN 575458-71-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(di-2-naphthalenylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



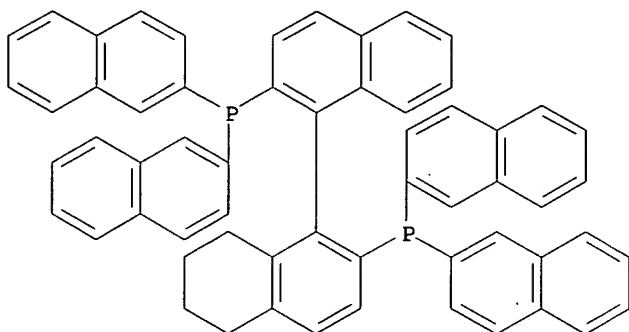
RN 575458-72-9 HCAPLUS

CN Phosphine oxide, [(1R)-2'-(di-2-naphthalenylphosphino)-5',6',7',8'-tetrahydro[1,1'-binaphthalen]-2-yl]di-2-naphthalenyl- (9CI) (CA INDEX NAME)



RN 575458-73-0 HCAPLUS

CN Phosphine, [(1R)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[di-2-naphthalenyl- (9CI) (CA INDEX NAME)



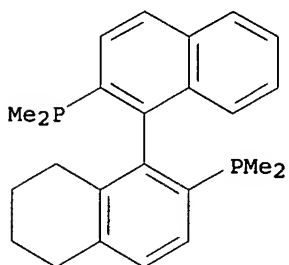
IT 575458-63-8P 575458-64-9P 575458-65-0P

575458-66-1P 575458-67-2P 575458-68-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of chiral diphosphine ligands with non-C2 symmetry axis
and their application)

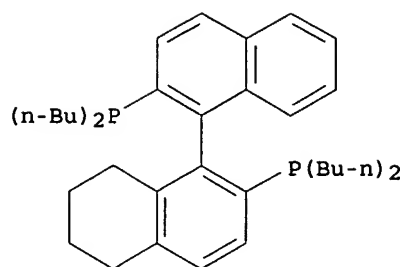
RN 575458-63-8 HCAPLUS

CN Phosphine, [(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[dimethyl- (9CI) (CA INDEX NAME)

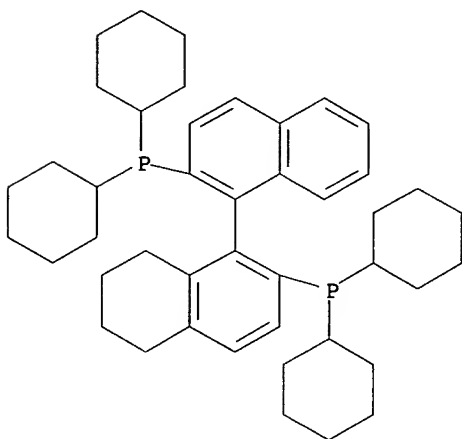


RN 575458-64-9 HCAPLUS

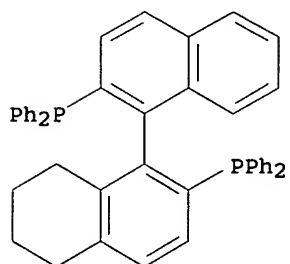
CN Phosphine, [(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[dibutyl- (9CI) (CA INDEX NAME)



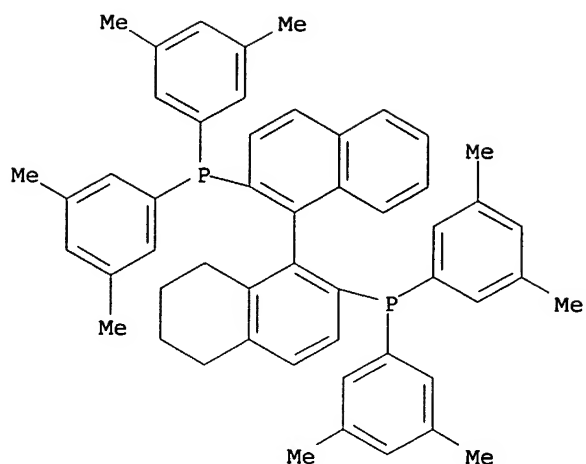
RN 575458-65-0 HCAPLUS
 CN Phosphine, [(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[dicyclohexyl]- (9CI) (CA INDEX NAME)



RN 575458-66-1 HCAPLUS
 CN Phosphine, [(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[diphenyl]- (9CI) (CA INDEX NAME)

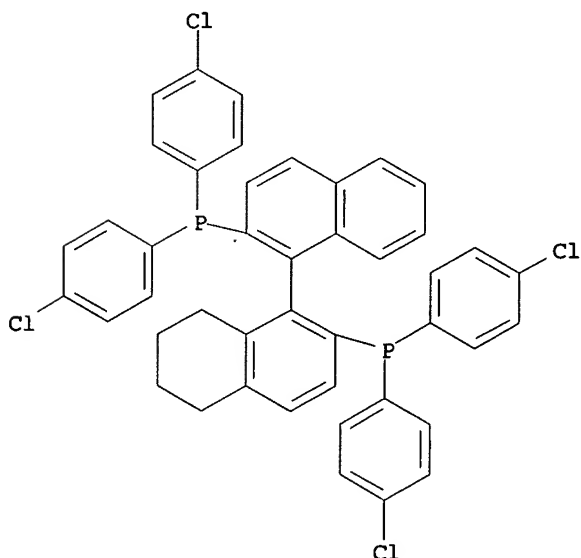


RN 575458-67-2 HCAPLUS
 CN Phosphine, [(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)



RN 575458-68-3 HCAPLUS

CN Phosphine, [(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[bis(4-chlorophenyl)- (9CI) (CA INDEX NAME)



IC ICM C07F009-28

ICS B01J031-24

CC 29-7 (Organometallic and Organometalloidal Compounds)

IT Ligands

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(prepn. of chiral diphosphine ligands with non-C2 symmetry axis and their application in asym. hydrogenation)

IT 575458-74-1P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of chiral diphosphine ligands

with non-C2 symmetry axis and their application)

IT 142128-92-5P, (S)-2,2'-Bis(methoxymethoxy)[1,1'-binaphthyl]

329321-01-9P 575451-03-5P 575458-43-4P 575458-44-5P

575458-45-6P 575458-46-7P 575458-47-8P
 575458-48-9P 575458-49-0P 575458-50-3P
 575458-51-4P 575458-52-5P 575458-53-6P
 575458-54-7P 575458-55-8P 575458-56-9P
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 575458-60-5P 575458-61-6P 575458-62-7P
 575458-70-7P 575458-71-8P 575458-72-9P
 575458-73-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. of chiral diphosphine ligands with non-C2 symmetry axis and their application)

IT 575458-63-8P 575458-64-9P 575458-65-0P
 575458-66-1P 575458-67-2P 575458-68-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of chiral diphosphine ligands with non-C2 symmetry axis and their application)

L26 ANSWER 17 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:639088 HCAPLUS

DOCUMENT NUMBER: 139:172690

TITLE: Preparation of metal complexes of chiral diphosphine ligand with non-C2 symmetry axis and their application in asymmetric catalytic hydrogenation of ketones

INVENTOR(S): Ding, Kuiling; Shen, Xiaoqiang; Li, Xin

PATENT ASSIGNEE(S): Shanghai Inst. of Organic Chemistry, Chinese Academy of Sciences, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 20 pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
----- CN 1356334	A	20020703	CN 2001-139087	20011207

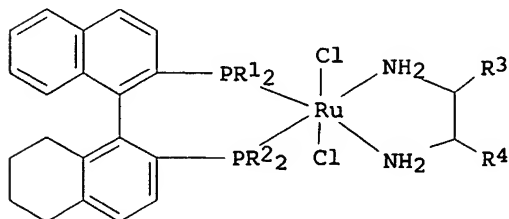
PRIORITY APPLN. INFO.:

<--
CN 2001-139087

20011207

OTHER SOURCE(S):
GI

<--
CASREACT 139:172690; MARPAT 139:172690



I

AB Title compds. I (R1, R2 = alkyl, cloalkyl, 1-naphthyl, 2-naphthyl, etc; R3, R4 = H, Ph, Me, Et, iso-Pr, ethylphenyl, or 4-methoxyphenyl; R3R4 = tetramethylene) were prepd. by the reaction

of ruthenium compds. such as $(\text{RuCl}_2\text{Ph})_2$ with chiral diphosphine ligand and diamine in polar org. solvent. The Ru complex may be used as catalyst for the asym. hydrogenation of ketones. Some arom. ketones (such as acetophenone, benzophenone, 2-acetylpyridine, 2-acetylthiophene, etc.) and some unsatd. arom. ketones (such as 3,6,6-trimethyl-4-cyclohexenone, 1-phenyl-4-penten-1-one, etc.) were asym. hydrogenated using the Ru complex.

IT 574751-89-6P 574751-90-9P 574751-91-0P

574751-92-1P 574751-93-2P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

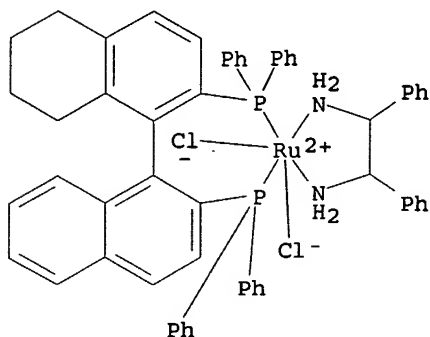
(prepn. of metal complexes of chiral

diphosphine ligand with non-C2 symmetry axis

and their application in asym. catalytic hydrogenation of ketones)

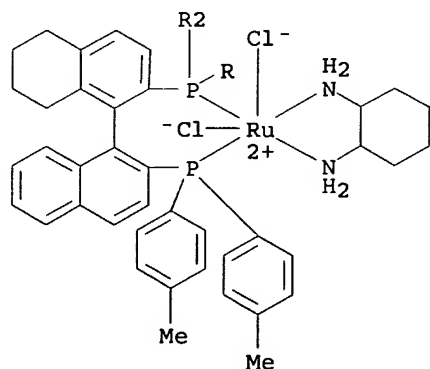
RN 574751-89-6 HCAPLUS

CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- $\kappa\text{N},\kappa\text{N}'$][[(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[diphenylphosphine- κP]]-, (OC-6-14)- (9CI) (CA INDEX NAME)



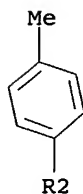
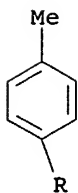
RN 574751-90-9 HCAPLUS

CN Ruthenium, dichloro[(1S,2S)-1,2-cyclohexanediamine- $\kappa\text{N},\kappa\text{N}'$][[(1S)-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[bis(4-methylphenyl)phosphine- κP]]-, (OC-6-14)- (9CI) (CA INDEX NAME)



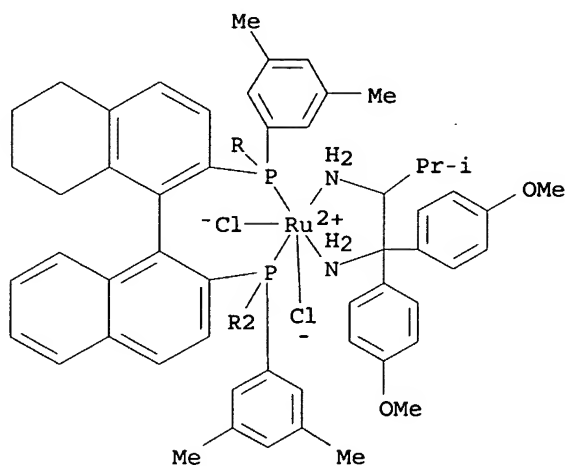
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PAGE 2-A

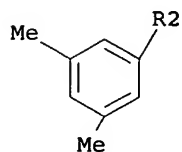
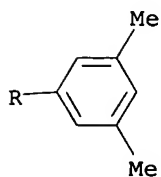


RN 574751-91-0 HCAPLUS
 CN Ruthenium, [1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine- $\kappa N, \kappa N'$]dichloro[(5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl)bis[bis(3,5-dimethylphenyl)phosphine- κP]]-, (OC-6-14)- (9CI) (CA INDEX NAME)

PAGE 1-A

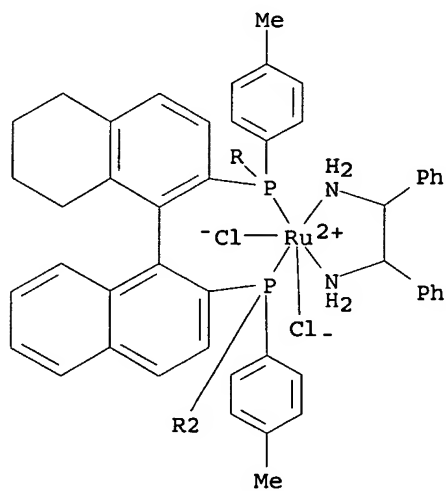


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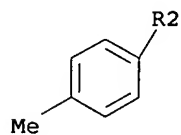
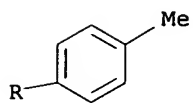


RN 574751-92-1 HCAPLUS
 CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'] [[[1S]-5,6,7,8-tetrahydro[1,1'-binaphthalene]-2,2'-diyl]bis[bis(4-methylphenyl)phosphine- κ P]]-, (OC-6-14)-(9CI) (CA INDEX NAME)

PAGE 1-A

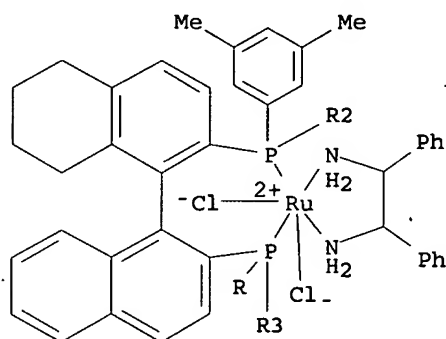


PAGE 2-A

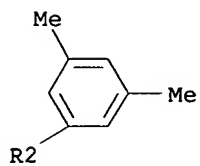
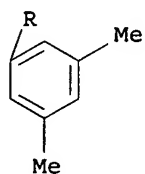


RN 574751-93-2 HCAPLUS
 CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine-
 κ N, κ N'] [[[1S]-5,6,7,8-tetrahydro[1,1'-binaphthalene]-
 2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-,
 (OC-6-14)- (9CI) (CA INDEX NAME)

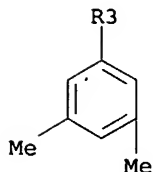
PAGE 1-A



PAGE 2-A



PAGE 3-A



IC ICM C07F009-28
 ICS C07F015-00; B01J031-24
 CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 25
 IT 574751-89-6P 574751-90-9P 574751-91-0P
 574751-92-1P 574751-93-2P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of metal complexes of chiral
 diphosphine ligand with non-C2 symmetry axis
 and their application in asym. catalytic hydrogenation of
 ketones)

L26 ANSWER 18 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:633720 HCAPLUS

DOCUMENT NUMBER: 139:180194

TITLE: Process for producing tertiary phosphine having
bulky hydrocarbon group bonded

INVENTOR(S): Maehara, Shinya; Iwazaki, Hideyuki

PATENT ASSIGNEE(S): Hokko Chemical Industry Co., Ltd., Japan

SOURCE: PCT Int. Appl., 46 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003066643	A1	20030814	WO 2003-JP1055	20030203
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W: CN, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR				
EP 1473297	A1	20041103	EP 2003-703147	20030203
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, CY, TR, BG, CZ, EE, HU, SK				
CN 1628122	A	20050615	CN 2003-803276	20030203
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JP 2003292498	A2	20031015	JP 2003-27287	20030204
<--				
JP 2003313194	A2	20031106	JP 2003-27288	20030204

US 2006020148

A1

20060126

US 2004-503577

200408
04

PRIORITY APPLN. INFO.:

<--
JP 2002-26490

A

200202
04<--
JP 2002-41204

A

200202
19<--
WO 2003-JP1055

W

200302
03

OTHER SOURCE(S):

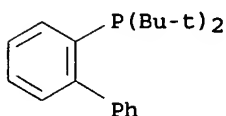
CASREACT 139:180194; MARPAT 139:180194

AB Disclosed is a process by which a high-purity tertiary phosphine having a three-dimensionally bulky hydrocarbon group bonded thereto can be produced in a high yield through a simple and safe procedure on an industrial scale. The process is characterized by reacting a dialkylphosphinous halide of formula R1(R2)P-X (R1, R2 = C3-13 tert-hydrocarbyl; X = Cl, Br) with a Grignard reagent of formula R3MgX1 (R3 = alkyl, alkenyl, alkynyl, cycloalkyl, aralkyl, lower alkoxy-lower alkyl, aryl; X1 = Cl, Br, iodo) in the presence of 0.1 to 5 mol% copper compd. based on the dialkylphosphinous halide to produce a tertiary phosphine represented by the following general formula R1(R2)PR3 (R1, R2, R3 = same as above). Tertiary phosphine is useful as a ligand for a transition metal catalyst in org. synthesis reactions. Thus, a Grignard reagent soln. prepd. from 13.5 g chlorobenzene and 3.5 g mg in 100 mL THF was added dropwise to a mixt. of 18.1 g di-tert-butylphosphinous chloride, 0.14 g CuBr, and 40 mL THF at 25-30° over 1 h, stirred at 35-40° for 3 h, cooled to room temp., and treated with 40 mL toluene and 30 mL 5% aq. H2SO4. The org. layer was sepd., washed with water and dried over anhyd. Na2SO4, followed by distn. of the solvent under reduced pressure and distn. of the product at 5 torr and 110-112° to give 89% di-tert-butylphenylphosphine (19.9 g, 99.0% purity).

IT 224311-51-7P, Di(tert-butyl)(2-phenylphenyl)phosphine
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (process for producing tertiary phosphine having bulky hydrocarbon group bonded by phosphonylation reaction of dialkylphosphinous halide with Grignard reagent in presence of copper halide or copper (II) acetate)

RN 224311-51-7 HCAPLUS

CN Phosphine, [1,1'-biphenyl]-2-ylbis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50

CC 29-7 (Organometallic and Organometalloidal Compounds)

IT 7447-39-4, Copper(II) chloride, uses 7758-89-6, Copper(I) chloride
 7787-70-4, Copper(I) bromide 7789-45-9, Copper(II) bromide
 13395-16-9, Copper(II) acetylacetonate

RL: CAT (Catalyst use); USES (Uses)

(process for producing tertiary phosphine having bulky hydrocarbon group bonded by phosphonylation reaction of

dialkylphosphinous halide with Grignard reagent in presence of copper halide or copper (II) acetate)

IT 6002-40-0P, Di(tert-butyl)methylphosphine 13716-12-6P,
Tri(tert-butyl)phosphine 25032-48-8P, Di(tert-butyl)ethylphosphine
25032-49-9P, Di(tert-butyl)isopropylphosphine 27286-19-7P,
Di(tert-butyl)benzylphosphine 29949-71-1P, Di(tert-
butyl)butylphosphine 32673-25-9P, Di(tert-butyl)phenylphosphine
36297-54-8P, Di(tert-butyl)(2-methylphenyl)phosphine 53098-11-6P,
Di(tert-butyl)(2-methoxyphenyl)phosphine 200352-94-9P,
Di(tert-butyl)(1-naphthyl)phosphine 224311-51-7P,
Di(tert-butyl)(2-phenylphenyl)phosphine 578763-02-7P,
Di(tert-butyl)(2,4,6-trimethylphenyl)phosphine 578763-05-0P,
Di(tert-amyl)phenylphosphine 578763-08-3P, Di(tert-
amyl)cyclohexylphosphine

RL: SPN (Synthetic preparation); PREP (Preparation)

(process for producing tertiary phosphine having bulky hydrocarbon group bonded by phosphonylation reaction of dialkylphosphinous halide with Grignard reagent in presence of copper halide or copper (II) acetate)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 19 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:590801 HCAPLUS

DOCUMENT NUMBER: 139:149755

TITLE: Novel phosphine compound,
transition metal complex
containing the same phosphine compound
as ligand and asymmetric
synthesis catalyst containing the
complex

INVENTOR(S): Shimizu, Hideo; Saito, Takao

PATENT ASSIGNEE(S): Takasago International Corp., Japan

SOURCE: U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003144139	A1	20030731	US 2002-330495	20021230
US 6717016	B2	20040406		
JP 2003226696	A2	20030812	JP 2002-23568	20020131
EP 1334976	A1	20030813	EP 2003-290239	20030130
EP 1334976	B1	20060308		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
AT 319724	E	20060315	AT 2003-290239	20030130

PRIORITY APPLN. INFO.:

JP 2002-23568 A

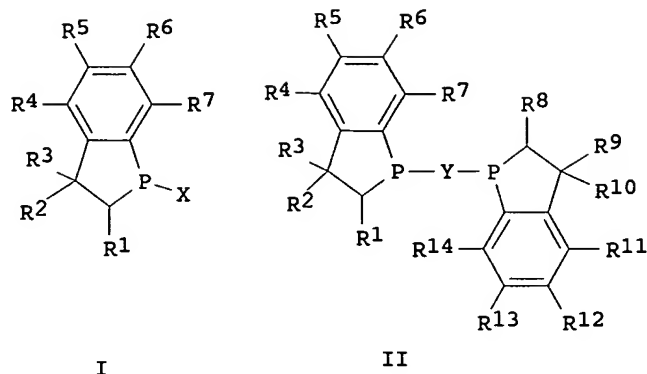
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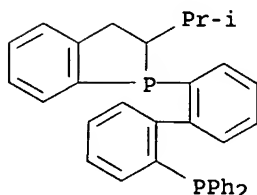
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OTHER SOURCE(S):
GI

CASREACT 139:149755; MARPAT 139:149755

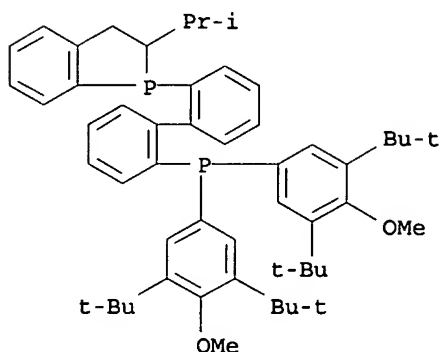


- AB The **prepn.** of **phosphine** compd., I and II (R1, R8 = C1-5 linear or branched alkyl; R2, R3, R9, R10 = represent independently H, C1-5 alkyl, etc.; R4, R5, R6, R7, R11, R12, R13, R14 = independently H, C1-5 alkyl, alkoxy, dialkylamino, R4-R5, R5-R6, R6-R7, R11-R12, R12-R13, R13-R14 = taken together with C atoms to which they are attached form a ring or fused ring, X, Y = functional group that forms a stable bond with P), a **transition metal** complex having the **phosphine** compd. as a **ligand** and a **catalyst** for **asym. hydrogenation** including the **transition metal** complex, is described. Thus, reaction of (+)-1,2-bis(2-isopropyl-2,3-dihydroxy-1H-phosphindol-1-yl)benzene ((+)-iPr-BeePHOS, **prepn.** given) with [Rh(COD)₂]OTf gave 81% [Rh(COD)((+)-iPr-BeePHOS)]OTf which catalyzed the **asym. hydrogenation** of Me N-acetamidocinnamate.
- IT 569650-32-4P 569650-33-5P 569650-36-8P 569650-44-8P
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. of phosphine compd. and their transition metal complex as catalyst for **asym. hydrogenation**)
- RN 569650-32-4 HCAPLUS
 CN 1H-Phosphindole, 1-[2'-(diphenylphosphino)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-(1-methylethyl)- (9CI) (CA INDEX NAME)



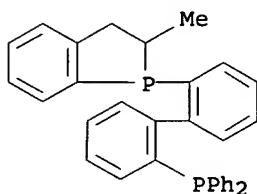
- RN 569650-33-5 HCAPLUS
 CN 1H-Phosphindole, 1-[2'-[bis[3,5-bis(1,1-dimethylethyl)-4-

methoxyphenyl]phosphino)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-(1-methylethyl)- (9CI) (CA INDEX NAME)



RN 569650-36-8 HCAPLUS

CN 1H-Phosphindole, 1-[2'-(diphenylphosphino)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-methyl- (9CI) (CA INDEX NAME)



RN 569650-44-8 HCAPLUS

CN Ruthenium(1+), chloro[1-[2'-(diphenylphosphino-κP)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-methyl-1H-phosphindole-κP][(1,2,3,4,5,6-η)-1-methyl-4-(1-methylethyl)benzene]-, chloride (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 569650-38-0P 569650-40-4P 569650-42-6P

569650-43-7P 569650-45-9P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of phosphine compd. and their transition metal complex as catalyst for asym. hydrogenation)

RN 569650-38-0 HCAPLUS

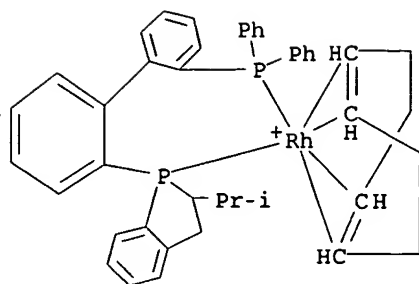
CN Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][1-[2'-(diphenylphosphino-κP)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-(1-methylethyl)-1H-phosphindole-κP]-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 569650-37-9

CMF C43 H44 P2 Rh

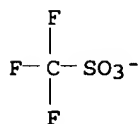
CCI CCS



CM 2

CRN 37181-39-8

CMF C F3 O3 S



RN 569650-40-4 HCAPLUS

CN Rhodium(1+), [1-[2'-[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphino-κP][1,1'-biphenyl]-2-yl]-2,3-dihydro-1H-phosphindole-κP][(1,2,5,6-η)-1,5-cyclooctadiene]-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

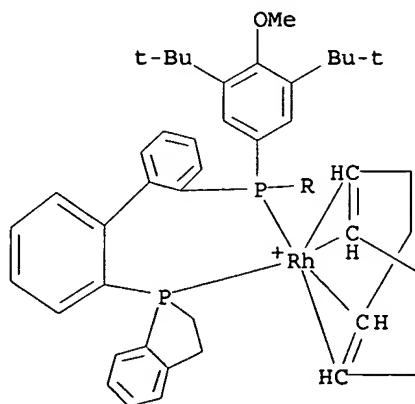
CM 1

CRN 569650-39-1

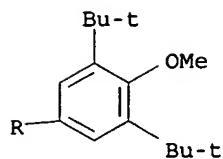
CMF C58 H74 O2 P2 Rh

CCI CCS

PAGE 1-A



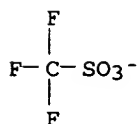
PAGE 2-A



CM 2

CRN 37181-39-8

CMF C F3 O3 S



RN 569650-42-6 HCAPLUS

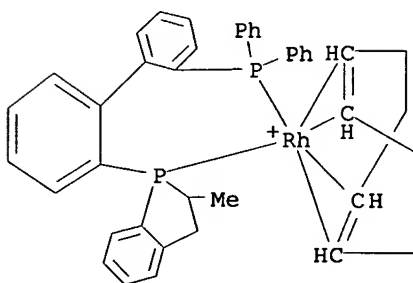
CN Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene] [1-[2'-(diphenylphosphino-κP)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-methyl-1H-phosphindole-κP]-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 569650-41-5

CMF C41 H40 P2 Rh

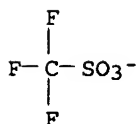
CCI CCS



CM 2

CRN 37181-39-8

CMF C F3 O3 S



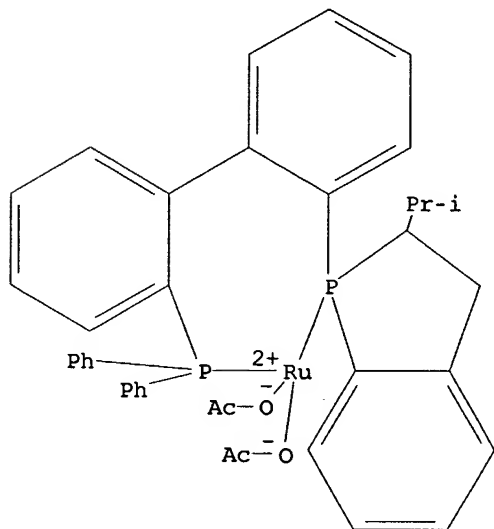
RN 569650-43-7 HCAPLUS

CN Ruthenium(1+), chloro[1-[2'-(diphenylphosphino-κP)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-(1-methylethyl)-1H-phosphindole-κP][(1,2,3,4,5,6-η)-1-methyl-4-(1-methylethyl)benzene]-, chloride (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 569650-45-9 HCAPLUS

CN Ruthenium, bis(acetato-κO)[1-[2'-(diphenylphosphino-κP)[1,1'-biphenyl]-2-yl]-2,3-dihydro-2-(1-methylethyl)-1H-phosphindole-κP]- (9CI) (CA INDEX NAME)



IC ICM C07F009-02

ICS B01J031-00

INCL 502162000; 568012000; 556013000

CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 25

ST phosphine ligand prepn

transition metal complex catalyzed asym

hydrogenation; phosphindolyl arene prepn rhodium

complexation asym hydrogenation

IT Phosphines

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepn. of phosphine compd. and their transition metal complex as catalyst for asym. hydrogenation)

IT 346457-41-8

RL: CAT (Catalyst use); USES (Uses)

(prepn. of phosphine compd. and their transition metal complex as catalyst for asym. hydrogenation)

IT 549514-63-8P 549529-04-6P 549529-05-7P 569650-32-4P

569650-33-5P 569650-36-8P 569650-44-8P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepn. of phosphine compd. and their transition metal complex as catalyst for asym. hydrogenation)

IT 549514-54-7P 549514-96-7P 569650-38-0P

569650-40-4P 569650-42-6P 569650-43-7P

569650-45-9P 569673-75-2P 569674-36-8P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of phosphine compd. and their transition metal complex as catalyst for asym. hydrogenation)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 20 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:580424 HCAPLUS

DOCUMENT NUMBER: 139:307577

TITLE: Chiral fluorous phosphorus ligands based on the binaphthyl skeleton: synthesis and applications in asymmetric catalysis

AUTHOR(S): Bayardon, Jerome; Cavazzini, Marco; Maillard, David; Pozzi, Gianluca; Quici, Silvio; Sinou, Denis

CORPORATE SOURCE: CPE Lyon, Laboratoire de Synthese Asymetrique, associe au CNRS, Universite Claude Bernard Lyon 1, Villeurbanne, 69622, Fr.

SOURCE: Tetrahedron: Asymmetry (2003), 14(15), 2215-2224

CODEN: TASYE3; ISSN: 0957-4166

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:307577

AB Two enantiopure fluorous phosphines have been conveniently synthesized by combining palladium-catalyzed coupling reactions of easily available binaphthyl building blocks with the introduction of fluorous ponytails onto arom. compds. via ether bond formation. These new fluorous chiral phosphines have been tested as ligands in metal-catalyzed asym. transformations, the best results being obtained in the palladium-catalyzed asym. allylic substitution of 1,3-diphenyl-2-propenyl acetate, affording products with up to 87% e.e.

IT 365240-77-3P 372152-06-2P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

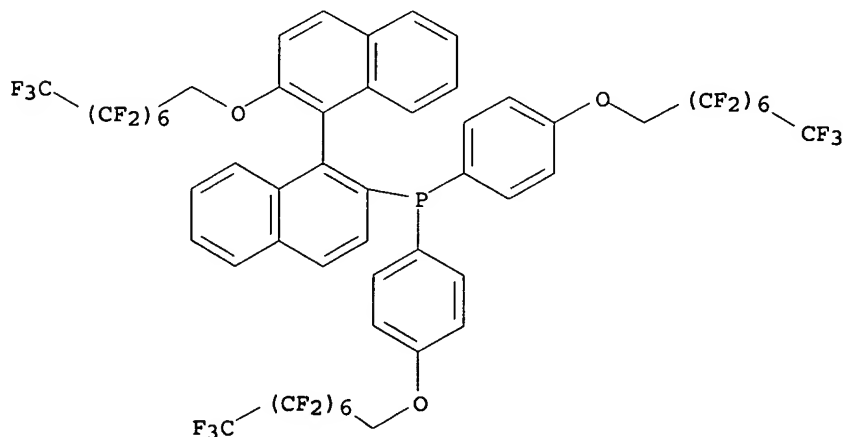
PREP (Preparation); USES (Uses)

(prepn. of chiral fluorous phosphine

ligands based on binaphthyl skeleton for asym. catalysis)

RN 365240-77-3 HCAPLUS

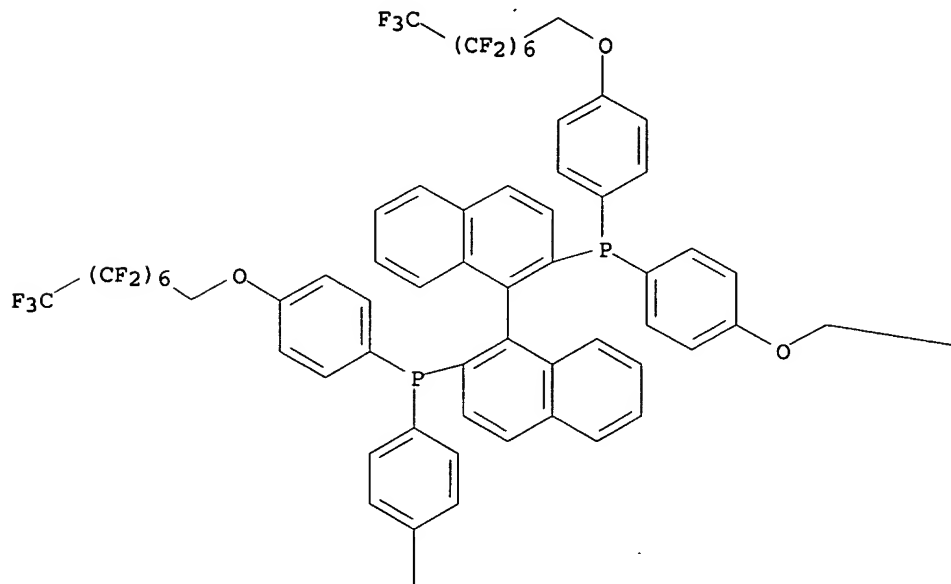
CN Phosphine, [(1R)-2'-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl)oxy][1,1'-binaphthalen]-2-yl]bis[4-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl)oxy]phenyl]-(9CI) (CA INDEX NAME)



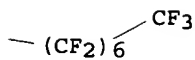
RN 372152-06-2 HCAPLUS

CN Phosphine, (1R)-[1,1'-binaphthalene]-2,2'-diylbis[bis[4-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl)oxy]phenyl]-(9CI) (CA INDEX NAME)

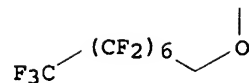
PAGE 1-A



PAGE 1-B



PAGE 2-A



CC 25-18 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
 Section cross-reference(s): 29
 IT 365240-77-3P 372152-06-2P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of chiral fluorous phosphine
 ligands based on binaphthyl skeleton for asym. catalysis)

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L26 ANSWER 21 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:514194 HCAPLUS

DOCUMENT NUMBER: 139:214576

TITLE: Palladium-Catalyzed Asymmetric Phosphination.
Enantioselective Synthesis of PAMP-BH₃, Ligand
Effects on Catalysis, and Direct Observation of
the Stereochemistry of Transmetalation and
Reductive Elimination

AUTHOR(S): Moncarz, Jillian R.; Bruner, Tim J.; Jewett,
John C.; Orchowski, Michael; Glueck, David S.;
Sommer, Roger D.; Lam, Kin-Chung; Incarvito,
Christopher D.; Concolino, Thomas E.;
Ceccarelli, Christopher; Zakharov, Lev N.;
Rheingold, Arnold L.

CORPORATE SOURCE: Burke Laboratory, Department of Chemistry,
Dartmouth College, Hanover, NH, 03755, USA

SOURCE: Organometallics (2003), 22(16),
3205-3221

CODEN: ORGND7; ISSN: 0276-7333

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:214576

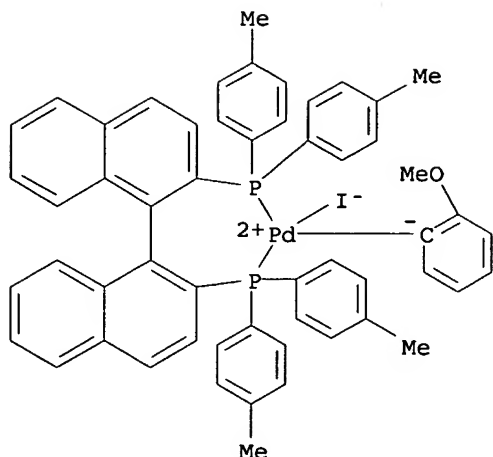
AB The complexes Pd(diphos)(o-An)(I) [o-An = o-MeOC₆H₄; diphos = dppe
(3), (S,S)-Chiraphos (4), (R,R)-Me-Duphos (5), (R,S)-tert-Bu-
Josiphos (6), (R)-Tol-Binap (7)] were prepd. Complex 6 catalyzed
the coupling of Ph(Me)(Ph)(BH₃) (2) with o-MeOC₆H₄I in the presence
of base to yield PAMP-BH₃ [(Me)(Ph)(o-An)(BH₃) (1)] in low
enantiomeric excess. Stoichiometric reactions of 3-7 with 2 and
NaOSiMe₃ depended on the diphosphine ligand. Complexes 6 and 7 gave
PAMP-BH₃ (1) and Pd(0) species; no intermediates were obsd. With 3,
the intermediate Pd(dppe)(o-An)[P(Me)(Ph)(BH₃)] (10) was obsd. by
31P NMR, while 4 gave the isolable diastereomeric Pd complexes
(SP)-Pd[(S,S)-Chiraphos](o-An)[P(Me)(Ph)(BH₃)] (11a) and
(RP)-Pd[(S,S)-Chiraphos](o-An)[P(Me)(Ph)(BH₃)] (11b), whose abs.
configurations were detd. by x-ray crystallog. after sepn. The
analogous Pd[(R,R)-Me-Duphos](o-An)[P(Me)(Ph)(BH₃)] diastereomers
(12a,b) were also sepd. and isolated. Treatment of 4 with highly
enantioenriched 2 (R or S) gave 11a or 11b in high diastereomeric
excess with retention of configuration at P. P-C reductive
elimination from either isomer of highly diastereoenriched 11 in the
presence of excess diphenylacetylene yielded Pd[(S,S)-
Chiraphos](PhC.tplbond.CPh) (14) and highly enantioenriched PAMP-BH₃
(1), with retention of configuration.

IT 586945-07-5P

RL: CAT (Catalyst use); PEP (Physical, engineering or
chemical process); PYP (Physical process); RCT (Reactant); SPN
(Synthetic preparation); PREP (Preparation); PROC
(Process); RACT (Reactant or reagent); USES (Uses)
(rotational barrier; palladium-catalyzed asym. prepn.
of anisyl(methyl)(phenyl)phosphine-borane,
ligand effects on catalysis and stereochem. of
transmetalation and reductive elimination)

RN 586945-07-5 HCAPLUS

CN Palladium, [(1R)-[1,1'-binaphthalene]-2,2'-diylbis[bis(4-
methylphenyl)phosphine-κP]]iodo(2-methoxyphenyl)-, (SP-4-2)-
(9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 75

IT 586945-07-5P

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent); USES (Uses) (rotational barrier; palladium-catalyzed asym. **prepn.** of anisyl(methyl)(phenyl)phosphine-borane, **ligand** effects on catalysis and stereochem. of transmetalation and reductive elimination)

REFERENCE COUNT: 89 THERE ARE 89 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 22 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:454336 HCAPLUS

DOCUMENT NUMBER: 139:36635

TITLE: Preparation of aryl diphosphine chiral ligands and their ruthenium complexes for asymmetric catalysis

INVENTOR(S): Malan, Christophe Guillaume; Zanotti-Gerosa, Antonio; Henschke, Julian Paul

PATENT ASSIGNEE(S): Chirotech Technology Limited, UK

SOURCE: PCT Int. Appl., 30 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003048173	A1	20030612	WO 2002-IB5820	20021205

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 EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK,
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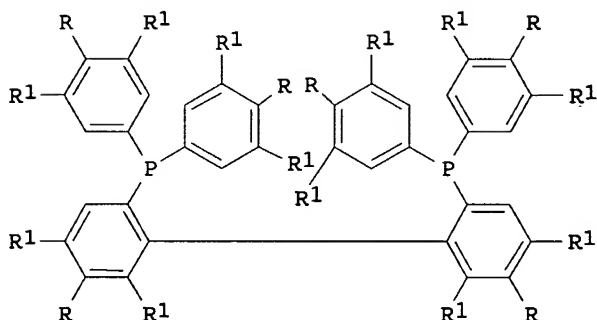
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 US 2005043556 A1 20050224 US 2004-493990 200404
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 PRIORITY APPLN. INFO.: GB 2001-29112 A 200112
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 WO 2002-IB5820 W 200212
 05

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 OTHER SOURCE(S): CASREACT 139:36635; MARPAT 139:36635
 GI



I

AB The present invention is based around the discoveries that novel ligands I (R = H, alkyl, alkoxy, aryl, heteroaryl, N-alkyl, N-aryl, S-alkyl, S-aryl, OSi(alkyl)3, OSi(aryl)3, F, Cl; R1 = alkyl, etc.), and the opposite enantiomers thereof, (i) have utility as components of catalysts for asym. hydrogenation and (ii) are readily accessible by an efficient general synthetic route. In particular, ruthenium-diamine complexes of I are highly active and selective catalysts for the asym. hydrogenation of ketones. Thus, RuCl2[(R)-4,4',6,6'-tetramethyl-2,2'-bis[bis(3,5-dimethylphenyl)phosphino]biphenyl][ethylenediamine] was prepd. and used as enantioselective hydrogenation catalyst for PhCHO.

IT 540744-40-9P 540744-43-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (decomplexation; prepn. of aryl diphosphine chiral ligands and their transition

metal complexes for asym. hydrogenation catalysis)

RN 540744-40-9 HCAPLUS
CN Palladium(1+), [2-[(1R)-1-(amino-κN)ethyl]phenyl-κC] [[(1S)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine-κP]]-, (SP-4-3)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

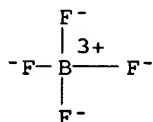
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CRN 540744-39-6
CMF C56 H62 N P2 Pd
CCI CCS

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



RN 540744-43-2 HCAPLUS
CN Palladium(1+), [2-[(1R)-1-(amino-κN)ethyl]phenyl-κC] [[(1R)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine-κP]]-, (SP-4-3)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

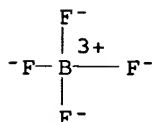
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CRN 540744-42-1
CMF C56 H62 N P2 Pd
CCI CCS

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



IT 540743-33-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(optical resolu.; prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)

RN 540743-33-7 HCAPLUS
CN Palladium(1+), [2-[(1R)-1-(amino-κN)ethyl]phenyl-κC] [(4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-

diyl)bis[bis(3,5-dimethylphenyl)phosphine-κP]]-, (SP-4-3)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 540743-32-6

CMF C56 H62 N P2 Pd

CCI CCS

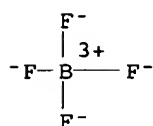
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CM 2

CRN 14874-70-5

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CCI CCS



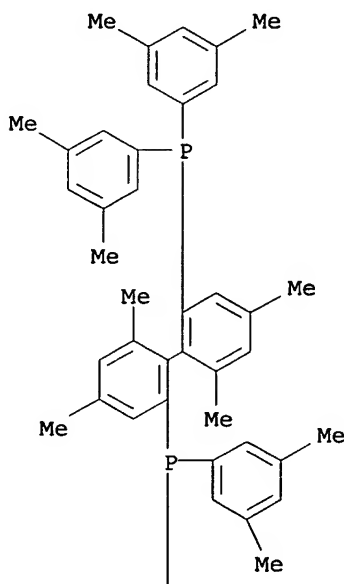
IT 540743-31-5P 540743-40-6P 540744-26-1P
540744-27-2P 540744-28-3P 540744-48-7P
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)

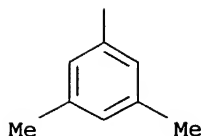
RN 540743-31-5 HCAPLUS

CN Phosphine, (4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)

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RN 540743-40-6 HCAPLUS
 CN Palladium(1+), [2-[(1R)-1-(amino-κN)ethyl]phenyl-
 κC] [[(1S)-5,5'-dimethoxy-4,4',6,6'-tetramethyl[1,1'-biphenyl]-
 2,2'-diyl]bis[bis(4-methoxy-3,5-dimethylphenyl)phosphine-κP]]-
 , (SP-4-3)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

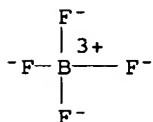
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 CCI CCS

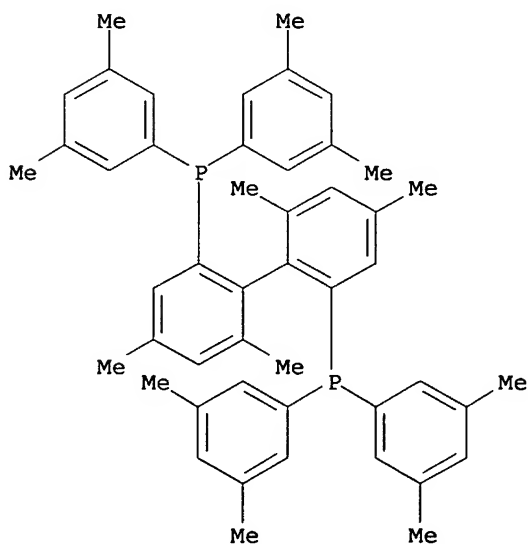
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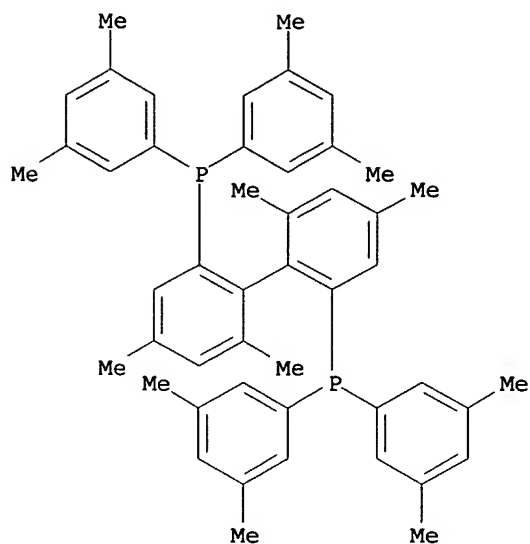


RN 540744-26-1 HCAPLUS
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 diyl]bis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)]



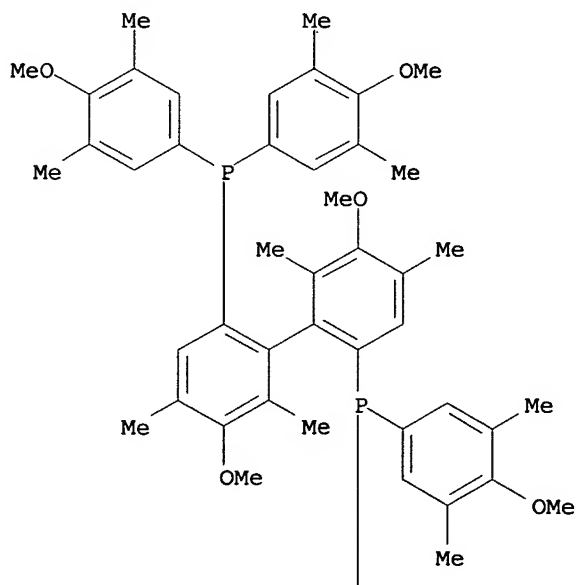
RN 540744-27-2 HCAPLUS

CN Phosphine, [(1R)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)]



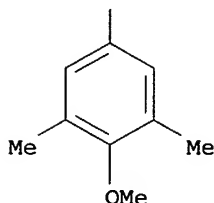
RN 540744-28-3 HCAPLUS

CN Phosphine, [(1S)-5,5'-dimethoxy-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(4-methoxy-3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)]



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RN 540744-48-7 HCAPLUS
 CN Palladium(1+), [2-[(1S)-1-(amino-κN)ethyl]phenyl-
 κC] [[(1S)-5,5'-dimethoxy-4,4',6,6'-tetramethyl[1,1'-biphenyl]-
 2,2'-diyl]bis[bis(4-methoxy-3,5-dimethylphenyl)phosphine-κP]]-
 , (SP-4-3)-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

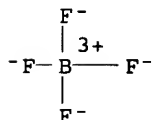
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CRN 540744-47-6
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 CCI CCS

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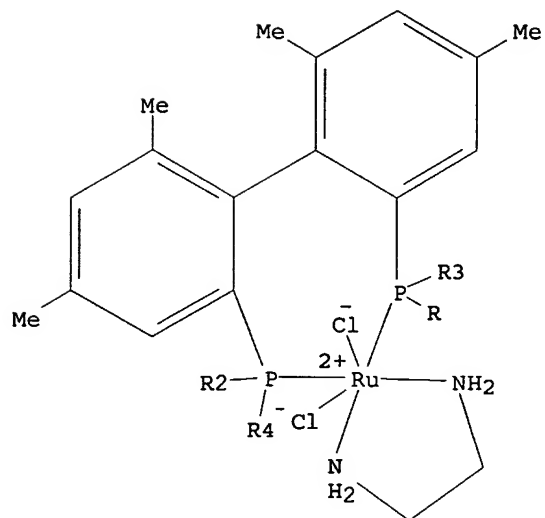
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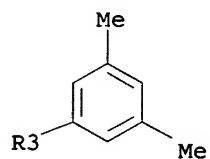
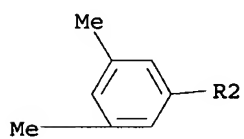
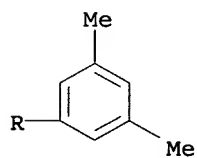


IT 540743-34-8P 540743-35-9P 540743-41-7P
 540743-42-8P 540744-45-4P 540744-46-5P
 540744-49-8P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of aryl diphosphine chiral
 ligands and their transition metal
 complexes for asym. hydrogenation catalysis)
 RN 540743-34-8 HCAPLUS
 CN Ruthenium, dichloro(1,2-ethanediamine-κN,κN') [(4,4',6,6'-
 tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[bis(3,5-
 dimethylphenyl)phosphine-κP]]-, (OC-6-13)- (9CI) (CA INDEX
 NAME)

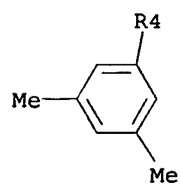
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PAGE 2-A

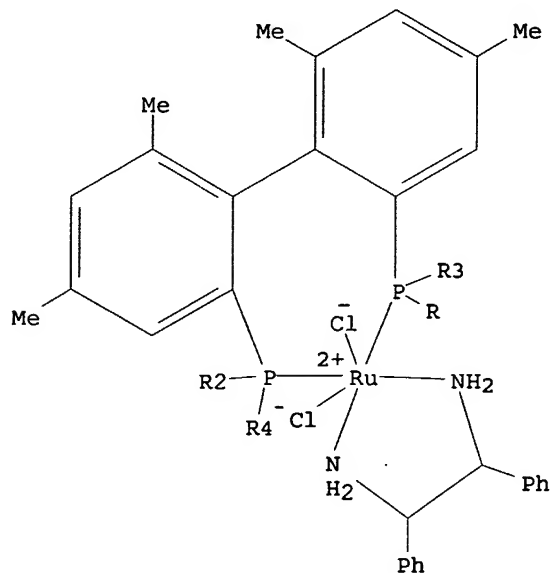


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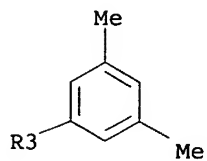
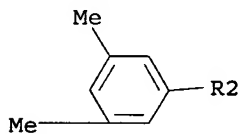
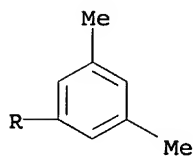


RN 540743-35-9 HCAPLUS
CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'][(4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-, (OC-6-13)-(9CI) (CA INDEX NAME)

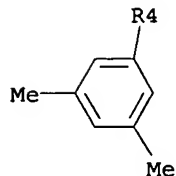
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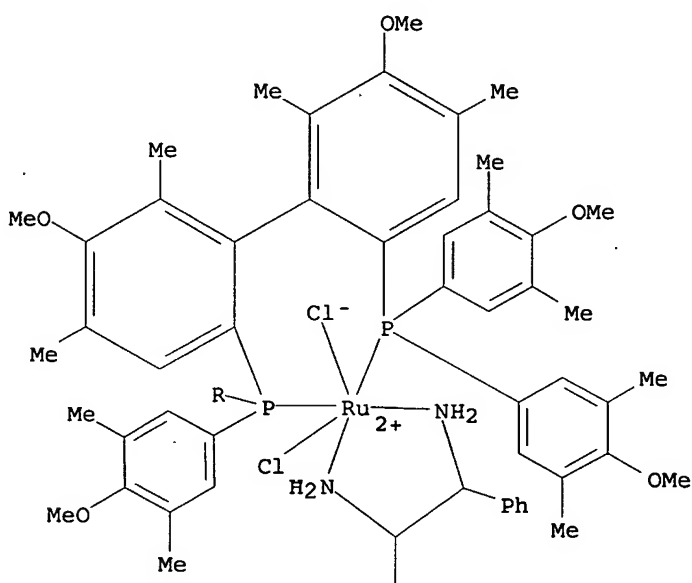


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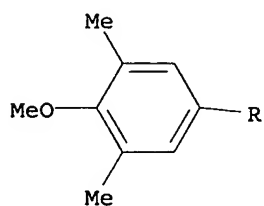


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PAGE 1-A

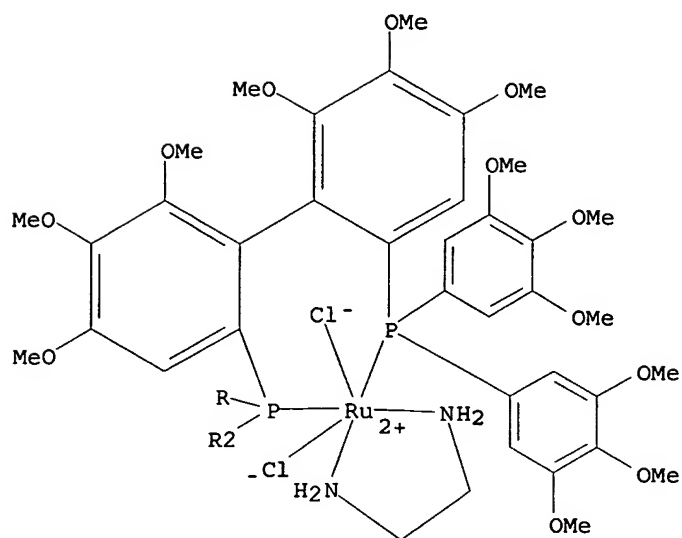


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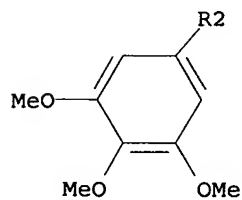
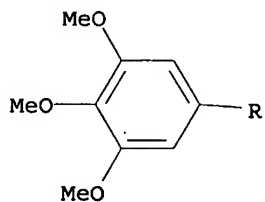


RN 540743-42-8 HCAPLUS
 CN Ruthenium, dichloro(1,2-ethanediamine-κN,κN')[(4,4',5,5',6,6'-hexamethoxy[1,1'-biphenyl]-2,2'-diyl)bis[bis(3,4,5-trimethoxyphenyl)phosphine-κP]]-, (OC-6-13)- (9CI) (CA INDEX NAME)

PAGE 1-A

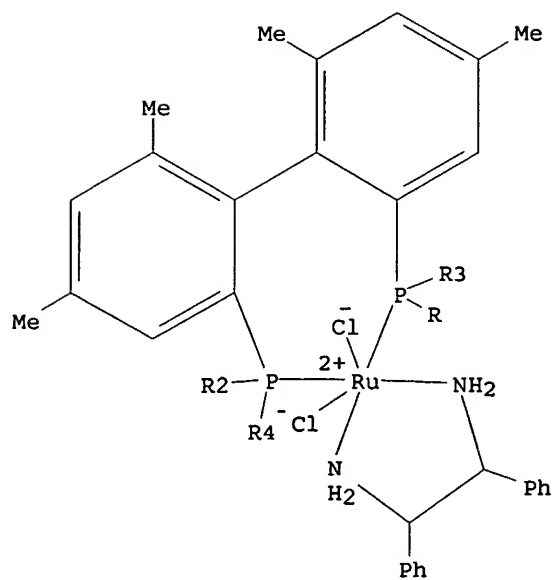


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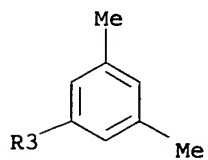
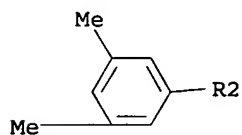
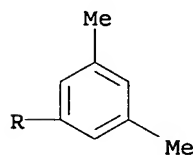


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 CN Ruthenium, dichloro[(1R,2R)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'][[[(1R)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-, (OC-6-13)-(9CI) (CA INDEX NAME)

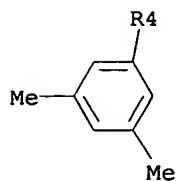
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PAGE 2-A

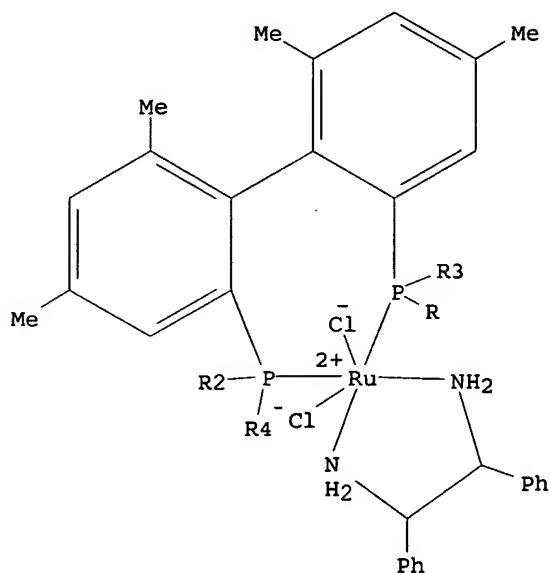


PAGE 3-A

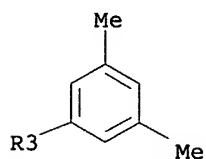
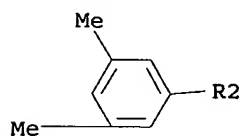
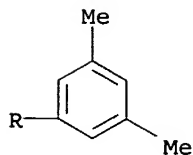


RN 540744-46-5 HCAPLUS
 CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'] [[[(1R)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-, (OC-6-13)-(9CI) (CA INDEX NAME)

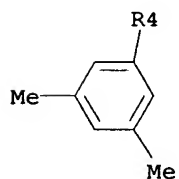
PAGE 1-A



PAGE 2-A

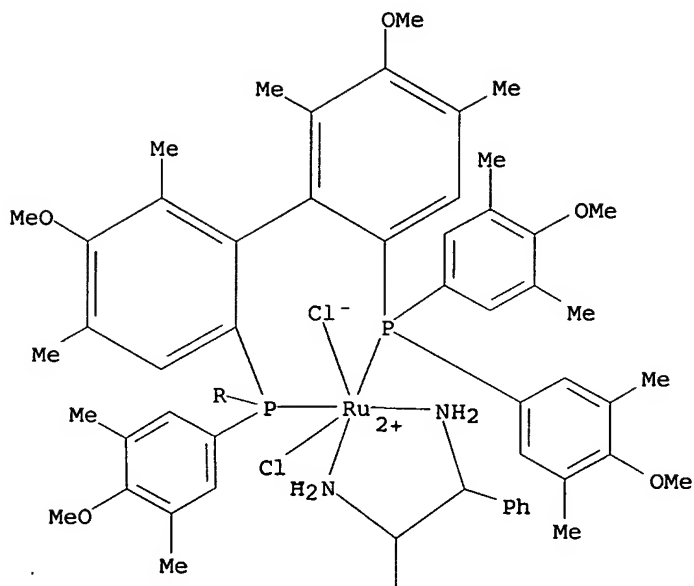


PAGE 3-A

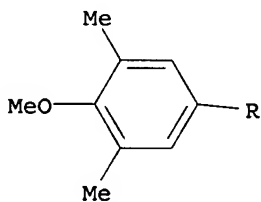


RN 540744-49-8 HCAPLUS
 CN Ruthenium, dichloro[[[(1S)-5,5'-dimethoxy-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(4-methoxy-3,5-dimethylphenyl)phosphine-κP]][(1R,2R)-1,2-diphenyl-1,2-ethanediamine-κN,κN']-, (OC-6-13)- (9CI) (CA INDEX NAME)

PAGE 1-A

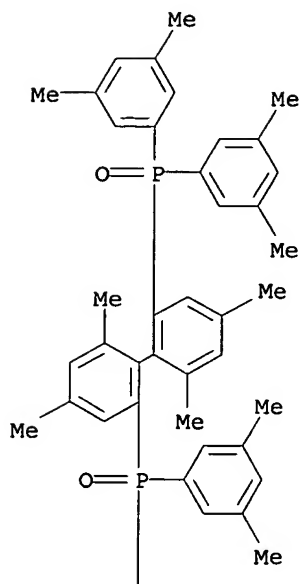


PAGE 2-A

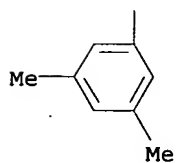


IT 540743-30-4P 540743-37-1P 540743-38-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. of aryl diphosphine chiral
 ligands and their transition metal
 complexes for asym. hydrogenation catalysis)
 RN 540743-30-4 HCAPLUS
 CN Phosphine oxide, (4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-
 diyl)bis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

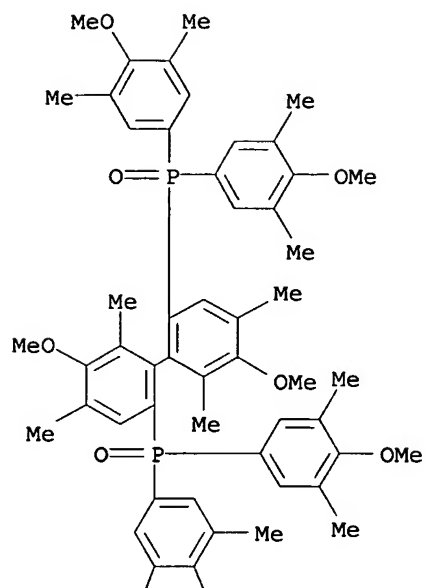


PAGE 2-A



RN 540743-37-1 HCAPLUS
CN Phosphine oxide, (5,5'-dimethoxy-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[bis(4-methoxy-3,5-dimethylphenyl)- (9CI)
(CA INDEX NAME)

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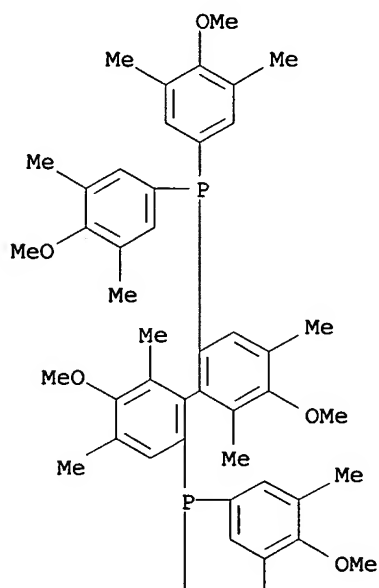


PAGE 2-A

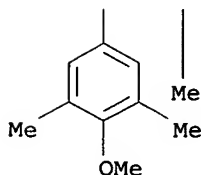


RN 540743-38-2 HCAPLUS
 CN Phosphine, (5,5'-dimethoxy-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[bis(4-methoxy-3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)

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- IC ICM C07F009-50
ICS B01J031-24
- CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 25
- IT **Ligands**
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(chiral, diphosphine; prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)
- IT Hydrogenation catalysts
(stereoselective; prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)
- IT 540744-40-9P 540744-43-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(decomplexation; prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)
- IT 540743-33-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(optical resolu.; prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)
- IT 37366-09-9 52462-29-0
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)
- IT 540743-31-5P 540743-40-6P 540744-26-1P 540744-27-2P 540744-28-3P 540744-48-7P
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)
- IT 540743-34-8P 540743-35-9P 540743-41-7P 540743-42-8P 540744-45-4P 540744-46-5P 540744-49-8P
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(prepn. of aryl diphosphine chiral ligands and their transition metal complexes for asym. hydrogenation catalysis)
- IT 98-86-2, Acetophenone, reactions 107-15-3, Ethylenediamine, reactions 131-58-8, 2-Methylbenzophenone 556-96-7,

1-Bromo-3,5-dimethylbenzene 1122-62-9, 2-Acetylpyridine
 14804-38-7, 1-Bromo-2,3-dimethyl-4-methoxybenzene 29841-69-8,
 (S,S)-1,2-Diphenylethane-1,2-diamine 35132-20-8,
 (R,R)-1,2-Diphenylethane-1,2-diamine 193158-80-4 540744-29-4
 RL: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of aryl diphosphine chiral
 ligands and their transition metal
 complexes for asym. hydrogenation catalysis)

IT 381212-20-OP 540743-29-1P 540743-30-4P 540743-36-OP
 540743-37-1P 540743-38-2P 540743-43-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)

(prepn. of aryl diphosphine chiral
 ligands and their transition metal
 complexes for asym. hydrogenation catalysis)

IT 68986-76-5

RL: RGT (Reagent); RACT (Reactant or reagent)

(prepn. of aryl diphosphine chiral
 ligands and their transition metal
 complexes for asym. hydrogenation catalysis)

IT 1445-91-6P 1517-69-7P 5472-13-9P 18728-61-5P

RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of aryl diphosphine chiral
 ligands and their transition metal
 complexes for asym. hydrogenation catalysis)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L26 ANSWER 23 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:411128 HCAPLUS

DOCUMENT NUMBER: 139:133663

TITLE: Planar chirality in tethered
 η^6 : η^1 -(phosphinophenylenearene-
 P)ruthenium(II) complexes and their potential
 use as asymmetric catalysts

AUTHOR(S): Faller, J. W.; D'Alliessi, Darlene G.

CORPORATE SOURCE: Department of Chemistry, Yale University, New
 Haven, CT, 06520, USA

SOURCE: Organometallics (2003), 22(13),
 2749-2757

CODEN: ORGND7; ISSN: 0276-7333

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:133663

AB Stereochem. and asym. catalytic activity of ruthenium monocationic
 and dicationic η^6 -arene complexes with tethered
 dicyclohexylphosphino complexing group was studied. Treatment of
 $[(\eta^6\text{-benzene})\text{RuCl}_2]_2$ with 2-dicyclohexylphosphino-2'-(N,N-
 dimethylamino)biphenyl (LA) yielded the planar chiral, tethered
 complex $[\text{Ru}(\eta^6\text{:}\eta^1\text{-2-(dicyclohexylphosphino-}\kappa\text{P)-2'-(N,N-}$
 $\text{dimethylamino)-1,1'-biphenyl}]\text{Cl}_2$ (2, $[\text{Ru}(\eta^6\text{:}\eta^1\text{-LA-P})\text{Cl}_2]$).
 Abstraction of a chloride from 2 with AgSbF_6 and treatment with PPh_3
 gave the chiral-at-metal complex anti- $[\text{Ru}(\eta^6\text{:}\eta^1\text{-LA-}$
 $\text{P})(\text{PPh}_3)\text{Cl}]\text{SbF}_6$, 3a, which underwent spontaneous resoln. upon
 crystn. The Me₂N group is coplanar with the η^6 -Ph ring in the
 cations and directs attack at the metal center, as well as detg. the
 thermodyn. stability of anti vs. syn epimers. The dication derived
 from enantiopure 3a catalyzed the Diels-Alder reaction of
 methacrolein and cyclopentadiene with modest (19-23%)
 enantioselectivity and good exo/endo ratio (96%). Analogs of 2 and
 3a contg. 2-(dicyclohexylphosphino)-2'-methyl-1,1'-biphenyl were
 also prepd. The configuration at the metal center is stable at the
 conditions studied. Averaged NMR spectra at ambient temps. are
 obsd., however, due to rapid conformational interconversions that

can be slowed at low temp.

IT 569346-92-5P

RL: CAT (Catalyst use); PUR (Purification or recovery);

SPN (Synthetic preparation); PREP (Preparation); USES

(Uses)

(spontaneous resolu., Diels-Alder catalyst; **prepn.**,
resolu., structure and asym. catalytic activity of ruthenium
planar-chiral η^6 -arene complexes with tethered
phosphine ligands)

RN 569346-92-5 HCAPLUS

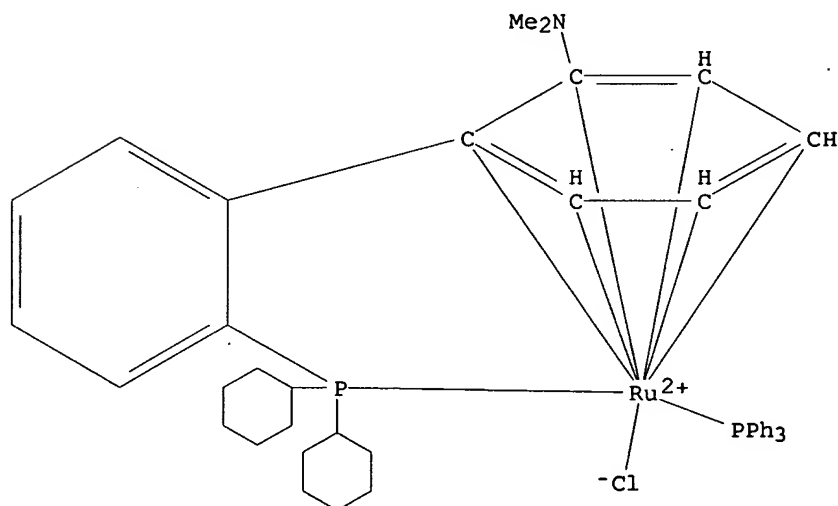
CN Ruthenium(1+), chloro[(1,2,3,4,5,6- η)-2'-(dicyclohexylphosphino-
 κ P)-N,N-dimethyl[1,1'-biphenyl]-2-amine](triphenylphosphine)-,
stereoisomer, (OC-6-11)-hexafluoroantimonate(1-) (9CI) (CA INDEX
NAME)

CM 1

CRN 569346-91-4

CMF C44 H51 Cl N P2 Ru

CCI CCS

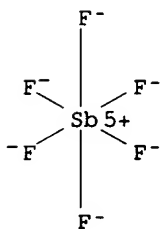


CM 2

CRN 17111-95-4

CMF F6 Sb

CCI CCS



IT 569346-90-3P

RL: CAT (Catalyst use); PRP (Properties); PUR

(Purification or recovery); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)

(spontaneous resolu., crystal structure, Diels-Alder catalyst;
prepn., resolu., structure and asym. catalytic activity
 of ruthenium planar-chiral η^6 -arene complexes with tethered
 phosphine ligands)

RN 569346-90-3 HCAPLUS

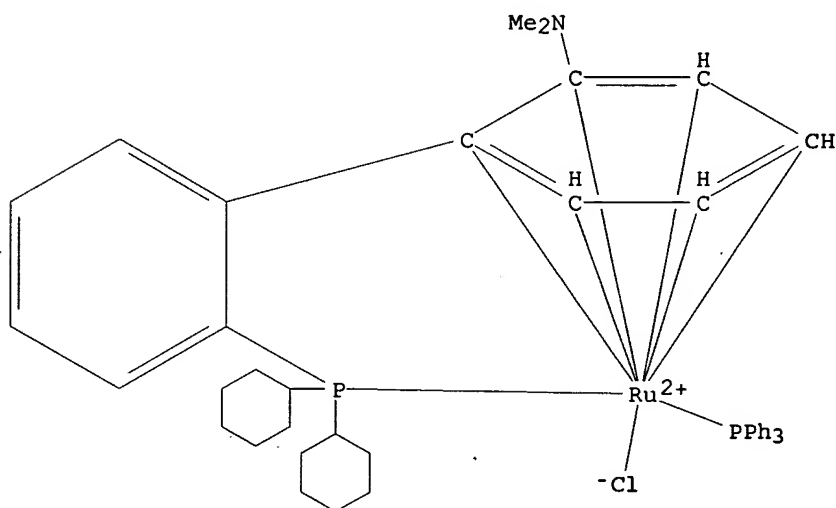
CN Ruthenium(1+), chloro[(1,2,3,4,5,6- η)-2'-(dicyclohexylphosphino-
 κ P)-N,N-dimethyl[1,1'-biphenyl]-2-amine](triphenylphosphine)-,
 stereoisomer, (OC-6-11)-hexafluoroantimonate(1-) (9CI) (CA INDEX
 NAME)

CM 1

CRN 569346-89-0

CMF C44 H51 Cl N P2 Ru

CCI CCS

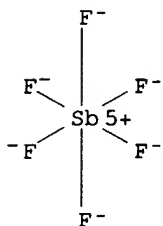


CM 2

CRN 17111-95-4

CMF F6 Sb

CCI CCS



CC 29-13 (Organometallic and Organometalloidal
 Compounds)

Section cross-reference(s): 22, 75

IT 569346-92-5P

RL: CAT (Catalyst use); PUR (Purification or recovery);
 SPN (Synthetic preparation); PREP (Preparation); USES
 (Uses)

(spontaneous resoln., Diels-Alder catalyst; **prepn.**,
resoln., structure and asym. catalytic activity of ruthenium
planar-chiral η^6 -arene complexes with tethered
phosphine ligands)

IT 569346-90-3P

RL: CAT (Catalyst use); PRP (Properties); PUR
(Purification or recovery); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)

(spontaneous resoln., crystal structure, Diels-Alder catalyst;
prepn., resoln., structure and asym. catalytic activity
of ruthenium planar-chiral η^6 -arene complexes with tethered
phosphine ligands)

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L26 ANSWER 24 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:363792 HCAPLUS

DOCUMENT NUMBER: 139:245721

TITLE: A concise synthesis of a new xylyl-biaryl
diphosphine ligand for asymmetric hydrogenation
of ketones

AUTHOR(S): Henschke, Julian P.; Zanotti-Gerosa, Antonio;
Moran, Paul; Harrison, Paul; Mullen, Brendan;
Casy, Guy; Lennon, Ian C.

CORPORATE SOURCE: A Subsidiary of The Dow Chemical Company, Unit
321, Chirotech Technology Ltd., Cambridge, CB4
0WG, UK

SOURCE: Tetrahedron Letters (2003), 44(23),
4379-4383

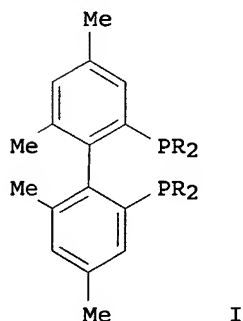
CODEN: TELEAY; ISSN: 0040-4039
PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:245721

GI



AB A concise synthesis of a sym. biaryl diphosphine ligand bearing
3,5-dimethylphenyl substituents at phosphorus is described. The
ruthenium catalysts [diphosphine RuCl_2 diamine] contg. the new
ligand (R)- or (S)-I [R = 3,5-Me₂C₆H₃] were found to be as active
and as selective as the state-of-the-art catalysts for homogeneous
asym. ketone hydrogenation.

IT 540744-45-4P 540744-46-5P 600127-09-1P

600135-73-7P

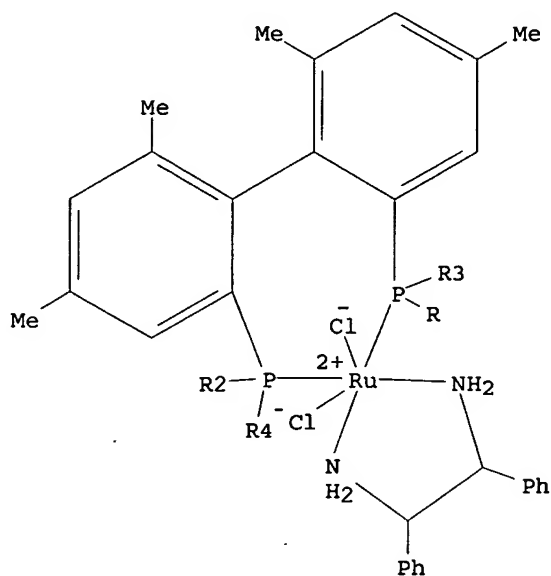
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

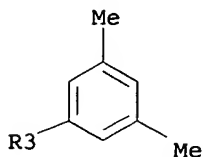
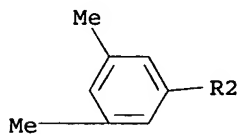
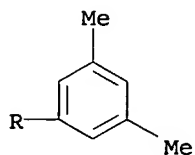
(prepn. of a xylyl biaryl diphosphine
ligand for asym. hydrogenation of ketones)

RN 540744-45-4 HCAPLUS
CN Ruthenium, dichloro[(1R,2R)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'][[[(1R)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-, (OC-6-13)-(9CI) (CA INDEX NAME)

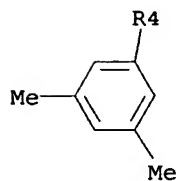
PAGE 1-A



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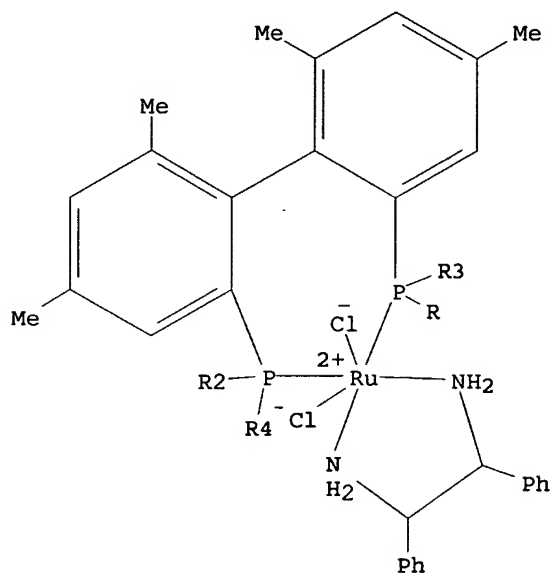


PAGE 3-A

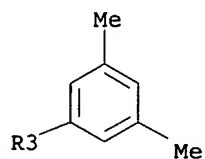
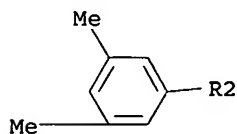
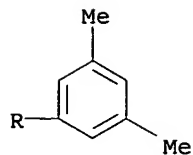


RN 540744-46-5 HCAPLUS
 CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'][[[(1R)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-, (OC-6-13)-(9CI) (CA INDEX NAME)

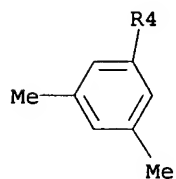
PAGE 1-A



PAGE 2-A



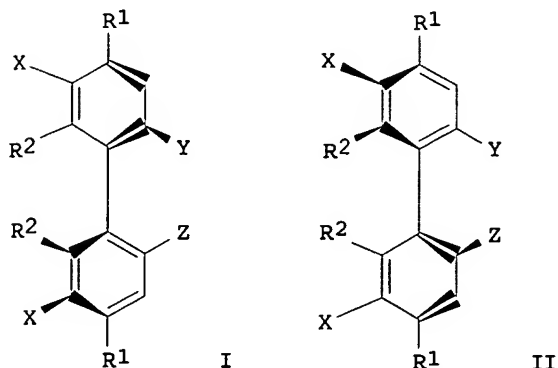
PAGE 3-A



RN 600127-09-1 HCAPLUS
 CN Ruthenium, [(2R)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine-
 κ N, κ N']dichloro[[[(1R)-4,4',6,6'-tetramethyl[1,1'-
 biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-
 , (OC-6-14)- (9CI) (CA INDEX NAME)

bis(diphenylphosphino)biphenyls, transition
 metal complexes having them as ligands, and
 optically active compounds using the complexes
 as hydrogenation catalysts
 INVENTOR(S): Yokosawa, Susumu; Sayou, Noboru; Matsumura,
 Kazuhiko; Unrin, Hidenori
 PATENT ASSIGNEE(S): Takasago Perfumery Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10067789	A2	19980310	JP 1996-261112	199608 27
JP 3493266	B2	20040203	<--	
US 5847222	A	19981208	US 1997-918347	199708 26
EP 826691	A2	19980304	EP 1997-402005	199708 27
EP 826691	A3	19990210	<--	
EP 826691	B1	20020710		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRIORITY APPLN. INFO.:			JP 1996-261112	A 199608 27
<--				
OTHER SOURCE(S):	CASREACT 128:270732; MARPAT 128:270732			
GI				



AB Diphosphines I or II ($Y = Z = \text{PPh}_2$; $X = \text{Cl}, \text{Br}$; $R_1, R_2 =$
 C1-3 alkyl) are prepd. by reaction of
 bis(trifluoromethanesulfonyloxy)biphenyls I or II ($Y = Z = \text{OSO}_2\text{CF}_3$;
 $X, R_1, R_2 =$ same as above) with $\text{Ph}_2\text{P(O)H}$, redn. of
 (phenylphosphinyl)biphenyls I or II ($Y = \text{P(O)Ph}_2$; $Z = \text{OSO}_2\text{CF}_3$; $X,$

R1, R2 = same as above), reaction of (phenylphosphino)biphenyls I or II (Y = PPh₂; Z = OSO₂CF₃; X, R1, R2 = same as above) with Ph₂P(O)H, and redn. of bis(phenylphosphinyl)biphenyls I or II (Y = Z = P(O)Ph₂; X, R1, R2 = same as above). Optically active compds. are prepd. by asym. hydrogenation of HOCH₂COMe in the presence of the transition metal complexes having I or II

(Y = Z = PPh₂; X, R1, R2 = same as above) as ligands.

Thus, (R)-(+)-2,2'-bis(diphenylphosphinyl)-5,5'-dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl [prepd. from

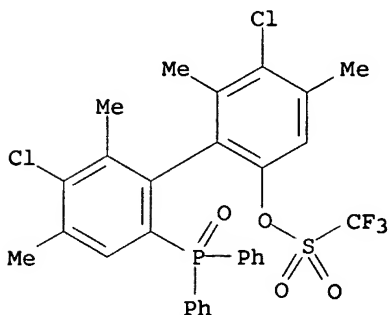
(R)-(-)-2,2'-bis(trifluoromethanesulfonyloxy)-5,5'-dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl via several steps] was reduced with HSiCl₃ and PhNMe₂ in PhMe under reflux for 12 h to give 81%

(R)-(+)-2,2'-bis(diphenylphosphino)-5,5'-dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl [(R)-(+)-CM-BIPHEMP]. Reaction of [Ru(cod)Cl₂]_n with (R)-(+)-CM-BIPHEMP and Et₃N in PhMe under reflux for 18 h gave [Ru₂Cl₄[(R)-(+)-CM-BIPHEMP]₂NEt₃], which was then used as a catalyst for asym. hydrogenation of HOCH₂COMe in MeOH at 65° under 10 atm of H₂ for 16 h to 97.8% (R)-HOCH₂CHMeOH. .

IT 205375-80-0P, (R)-(+)-2-Diphenylphosphinyl-2'-(trifluoromethanesulfonyloxy)-5,5'-dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl 205375-81-1P, (R)-(+)-2-Diphenylphosphino-2'-(trifluoromethanesulfonyloxy)-5,5'-dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl 205375-82-2P, (R)-(+)-2,2'-Bis(diphenylphosphinyl)-5,5'-dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl 205443-95-4P, (R)-(+)-CM-BIPHEMP
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. of optically active bis(diphenylphosphino)biphenyls)

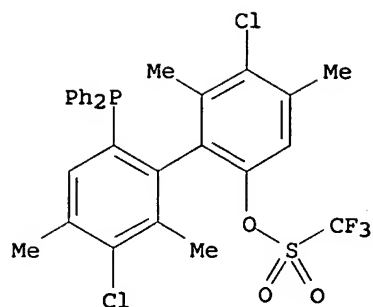
RN 205375-80-0 HCAPLUS

CN Methanesulfonic acid, trifluoro-, 3',5-dichloro-6'-(diphenylphosphinyl)-2',4,4',6-tetramethyl[1,1'-biphenyl]-2-yl ester, (R)- (9CI) (CA INDEX NAME)



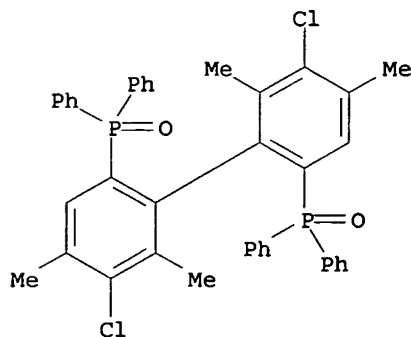
RN 205375-81-1 HCAPLUS

CN Methanesulfonic acid, trifluoro-, 3',5-dichloro-6'-(diphenylphosphino)-2',4,4',6-tetramethyl[1,1'-biphenyl]-2-yl ester, (R)- (9CI) (CA INDEX NAME)



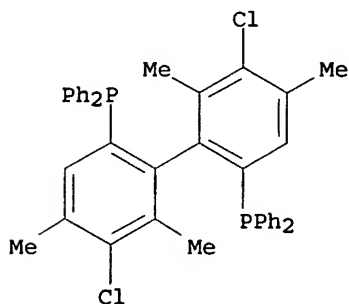
RN 205375-82-2 HCAPLUS

CN Phosphine oxide, (5,5'-dichloro-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[diphenyl-, (R)- (9CI) (CA INDEX NAME)



RN 205443-95-4 HCAPLUS

CN Phosphine, (5,5'-dichloro-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[diphenyl-, (R)- (9CI) (CA INDEX NAME)



IT 205247-98-9P 205247-99-0P 205248-00-6P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of transition metal complexes from Ru compds. and bis(diphenylphosphino)biphenyls)

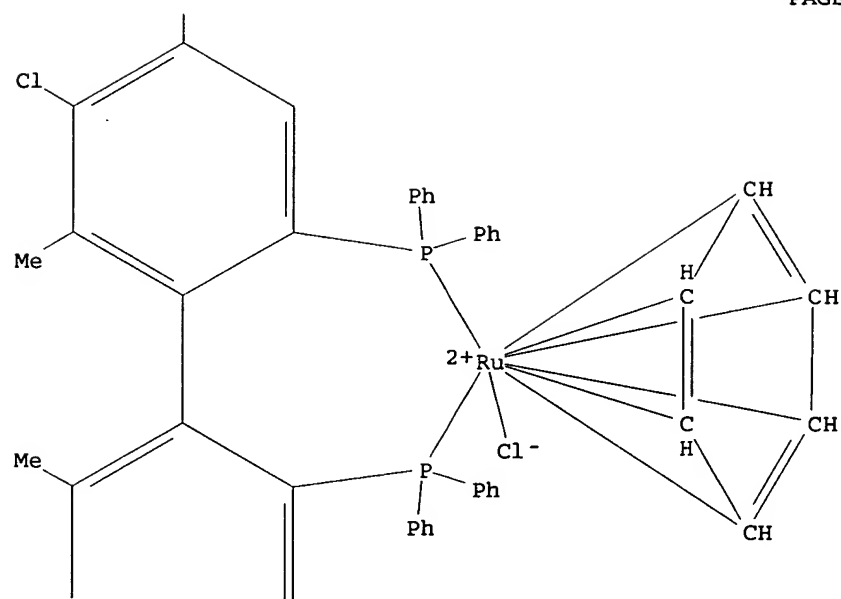
RN 205247-98-9 HCAPLUS

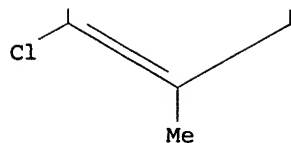
CN Ruthenium(1+), (η6-benzene)chloro[(5,5'-dichloro-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[diphenylphosphine-κP]]-, chloride, (R)- (9CI) (CA INDEX NAME)

PAGE 1-A

Me

PAGE 2-A





PAGE 3-A

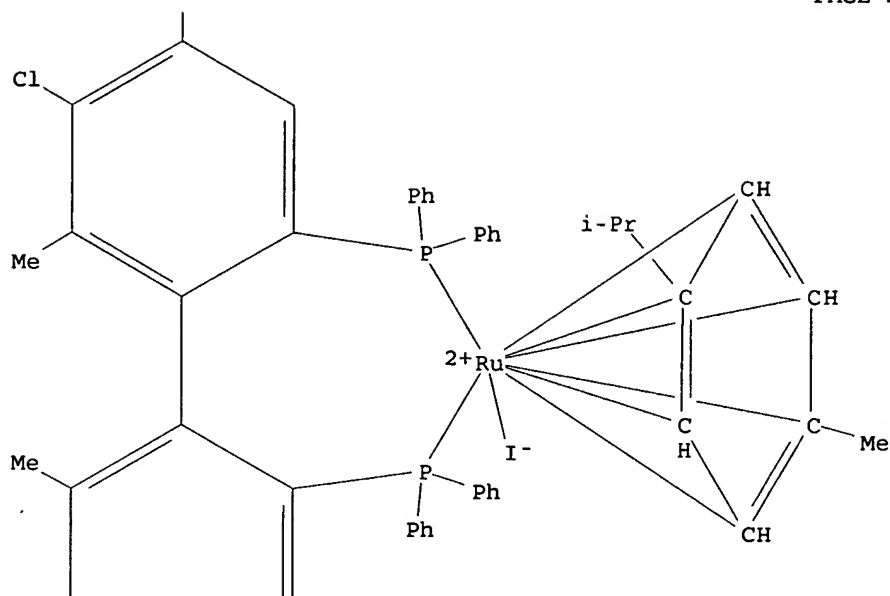


RN 205247-99-0 HCAPLUS
CN Ruthenium(1+), [(5,5'-dichloro-4,4',6,6'-tetramethyl[1,1'-biphenyl]-
2,2'-diyl)bis[diphenylphosphine-κP]]iodo[(1,2,3,4,5,6-η)-1-
methyl-4-(1-methylethyl)benzene]-, iodide, (R)- (9CI) (CA INDEX
NAME)

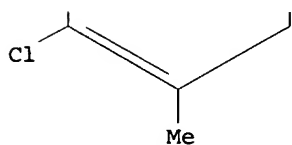
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Me

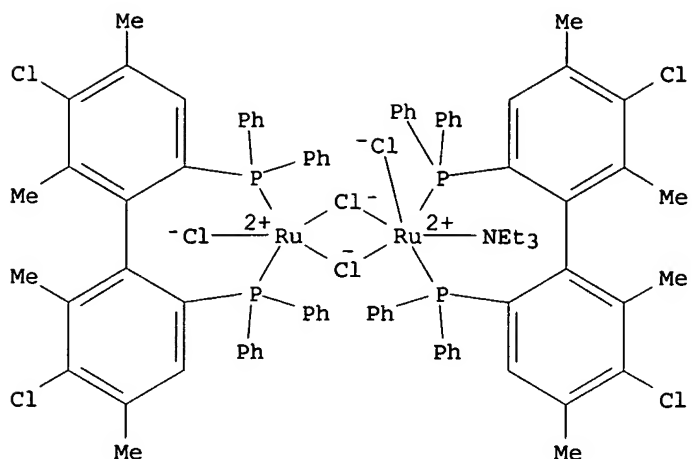
PAGE 2-A



PAGE 3-A

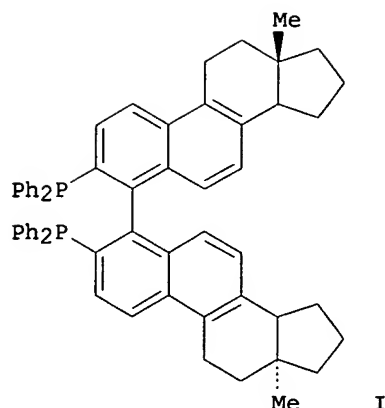


RN 205248-00-6 HCAPLUS
 CN Ruthenium, di- μ -chlorodichlorobis[(5,5'-dichloro-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl)bis[diphenylphosphine- κ P]](N,N-diethylethanamine)di-, stereoisomer (9CI) (CA INDEX NAME)



- IC ICM C07F009-50
ICS B01J031-22; C07B053-00; C07B061-00; C07M007-00
CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 23, 67
IT 7439-88-5, Iridium, uses 7440-02-0, Nickel, uses 7440-05-3,
Palladium, uses 7440-16-6, Rhodium, uses
RL: CAT (Catalyst use); USES (Uses)
(prepn. of alcs. by asym. hydrogenation of ketones using
Ru-bis(diphenylphosphino)biphenyl complex catalysts)
IT 205375-79-7P, (R)-(-)-2,2'-Bis(trifluoromethanesulfonyloxy)-5,5'-
dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl 205375-80-0P,
(R)-(+)-2-Diphenylphosphinyl-2'-trifluoromethanesulfonyloxy-5,5'-
dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl 205375-81-1P,
(R)-(+)-2-Diphenylphosphino-2'-(trifluoromethanesulfonyloxy)-5,5'-
dichloro-4,4',6,6'-tetramethyl-1,1'-biphenyl 205375-82-2P,
(R)-(+)-2,2'-Bis(diphenylphosphinyl)-5,5'-dichloro-4,4',6,6'-
tetramethyl-1,1'-biphenyl 205375-83-3P 205443-95-4P,
(R)-(+)-CM-BIPHEMP
RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(prepn. of optically active bis(diphenylphosphino)biphenyls)
IT 205247-98-9P 205247-99-0P 205248-00-6P
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of transition metal complexes from Ru compds. and
bis(diphenylphosphino)biphenyls)

L26 ANSWER 52 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:684670 HCAPLUS
DOCUMENT NUMBER: 127:330924
TITLE: A Bis-Steroidal Phosphine as New Chiral
Hydrogenation Ligand
AUTHOR(S): Enev, V.; Ewers, Ch. L. J.; Harre, M.; Nickisch,
K.; Mohr, J. T.
CORPORATE SOURCE: Process Research, Schering AG-Berlin, Berlin,
D-13342, Germany
SOURCE: Journal of Organic Chemistry (1997),
62(21), 7092-7093
CODEN: JOCEAH; ISSN: 0022-3263
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 127:330924
GI



AB The new atropisomeric bissteroidal ligands R- and S-I are synthesized in 4 steps from the steroid precursor equilenin. The diastereomeric ligands are separable by column chromatog. and exhibit mirror image CD spectra. Likewise, they induce in the chiral redn. of acetophenone to enantiomeric 1-phenylethanols. The synthesis of the phosphine ligands R- and S-I is accomplished by a Ni-mediated cross coupling of the corresponding triflates with Ph₂PH. The application of this new bissteroidal phosphine in the hydrogenation of Me acetoacetate, phenylcinnamic acid, and tiglic acid show that the in situ prepd. chiral catalyst RuCl₂(ligand)(DMF)₂ is more active in terms of enantiomeric excess and/or conversion than the corresponding BINAP-derived catalyst.

IT 197705-71-8P 197808-25-6P

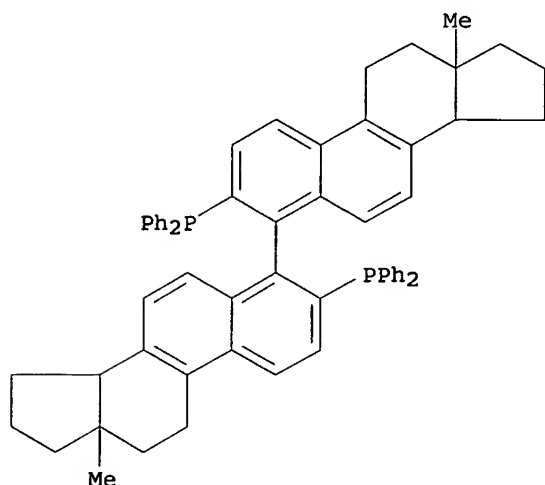
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of bissteroidal phosphine as new
chiral hydrogenation ligand)

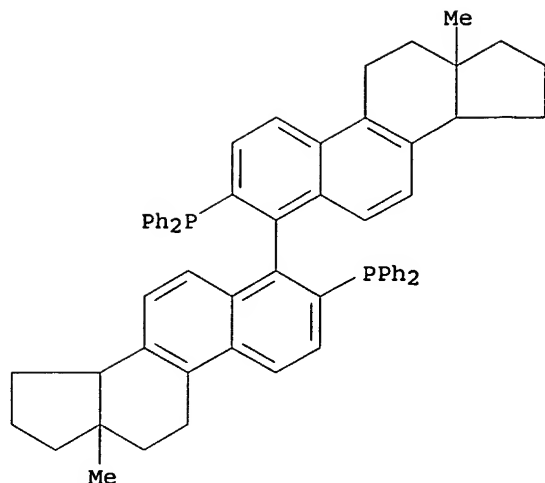
RN 197705-71-8 HCAPLUS

CN Phosphine, (4R)-[4,4'-biestra-1,3,5,7,9-pentaene]-3,3'-
diylbis[diphenyl- (9CI) (CA INDEX NAME)



RN 197808-25-6 HCAPLUS

CN Phosphine, (4S)-[4,4'-biestra-1,3,5,7,9-pentaene]-3,3'-
diylbis[diphenyl- (9CI) (CA INDEX NAME)



CC 21-2 (General Organic Chemistry)
Section cross-reference(s): 32, 67

IT 197705-71-8P 197808-25-6P
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of bissteroidal phosphine as new
chiral hydrogenation ligand)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L26 ANSWER 53 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:602685 HCAPLUS

DOCUMENT NUMBER: 127:293410

TITLE: Tertiary phosphines, their transition metal
complexes, and regioselective and
stereoselective preparation of optically active
organosilicon compounds using the complexes as
catalysts

INVENTOR(S): Hayashi, Tamio; Uozumi, Yasuhiro

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

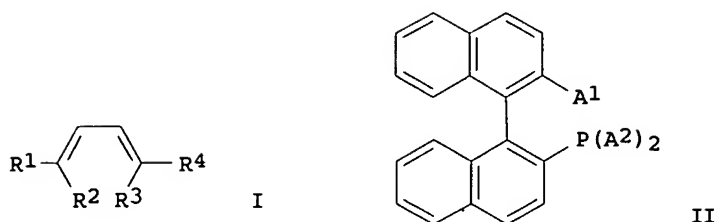
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

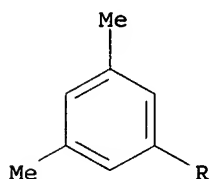
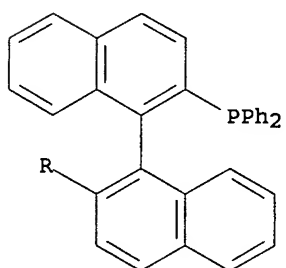
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09235289	A2	19970909	JP 1996-44679	199603 01
JP 3430775	B2	20030728	JP 1996-44679	199603 01

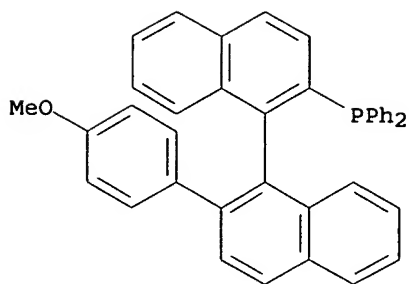
OTHER SOURCE(S): CASREACT 127:293410; MARPAT 127:293410
GI



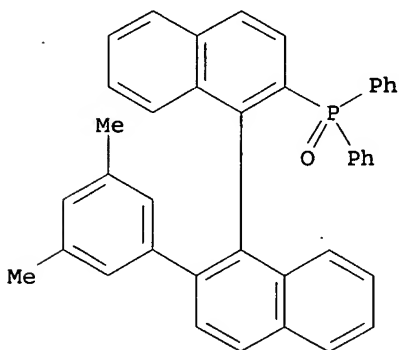
- AB Optically active (Z)-((XYZSi)CR₁R₂)CH:CH(CHR₃R₄) [R₁-R₄ = H, linear or branched (un)substituted alkyl, (un)substituted cycloalkyl, (un)substituted Ph; R₂R₃ may form (CH₂)_n; n = 1-3; X, Y, Z = H, alkyl, alkoxy, halo] are prep'd. by reaction of dienes I (R₁-R₄ = same as above) with HSiXYZ (X, Y, Z = same as above) in the presence of transition metal complexes contg. optically active tertiary phosphines II [A₁, A₂ = Ph (substituted with halo, lower (halo)alkyl, lower alkoxy)] as ligands. 1-Phenylbutadiene reacted with SiHCl₃ in the presence of (R)-II (A₁ = 3,5-dimethylphenyl, A₂ = Ph) and allylpalladium chloride dimer at 20° for 13.5 h to give 83% of optically active 1-trichlorosilyl-1-phenyl-2-butene (Z/E = 96/4).
- IT 197005-07-5P, (R)-2-(Diphenylphosphino)-2'-(3,5-dimethylphenyl)-1,1'-binaphthyl 197005-08-6P, (R)-2-(Diphenylphosphino)-2'-(4-methoxyphenyl)-1,1'-binaphthyl
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of optically active organosilicons by regioselective stereoselective silylation of dienes using tertiary phosphine-metal complex catalysts)
- RN 197005-07-5 HCAPLUS
- CN Phosphine, [(1R)-2'-(3,5-dimethylphenyl)[1,1'-binaphthalen]-2-yl]diphenyl- (9CI) (CA INDEX NAME)



- RN 197005-08-6 HCAPLUS
- CN Phosphine, [(1R)-2'-(4-methoxyphenyl)[1,1'-binaphthalen]-2-yl]diphenyl- (9CI) (CA INDEX NAME)



IT 197005-06-4P, (R)-2-(Diphenylphosphinyl)-2'-(3,5-dimethylphenyl)-1,1'-binaphthyl
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. of optically active organosilicons by regioselective stereoselective silylation of dienes using tertiary phosphine-metal complex catalysts)
 RN 197005-06-4 HCAPLUS
 CN Phosphine oxide, [2'-(3,5-dimethylphenyl)[1,1'-binaphthalen]-2-yl]diphenyl-, (R)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
 ICS B01J031-24; C07B053-00; C07F007-08; C07F007-12; C07F007-14; C07F007-18; C07B061-00; C07M007-00
 CC 29-6 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 67
 IT 12012-95-2, Allylpalladium chloride dimer
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of optically active organosilicons by regioselective stereoselective silylation of dienes using tertiary phosphine-metal complex catalysts)
 IT 197005-07-5P, (R)-2-(Diphenylphosphino)-2'-(3,5-dimethylphenyl)-1,1'-binaphthyl 197005-08-6P, (R)-2-(Diphenylphosphino)-2'-(4-methoxyphenyl)-1,1'-binaphthyl
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. of optically active organosilicons by regioselective stereoselective silylation of dienes using tertiary phosphine-metal complex catalysts)
 IT 197005-06-4P, (R)-2-(Diphenylphosphinyl)-2'-(3,5-dimethylphenyl)-1,1'-binaphthyl
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. of optically active organosilicons by regioselective stereoselective silylation of dienes using tertiary

phosphine-metal complex catalysts)

L26 ANSWER 54 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:204039 HCAPLUS

DOCUMENT NUMBER: 126:199669

TITLE: Chiral unsymmetric diphosphine compounds and transition metal complexes containing them as ligands

INVENTOR(S): Sayo, Noboru; Zhang, Xiaoyong; Omoto, Tatsuya; Yokozawa, Tohru; Yamasaki, Tetsuro; Kumobayashi, Hidenori

PATENT ASSIGNEE(S): Takasago International Corporation, Japan

SOURCE: Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

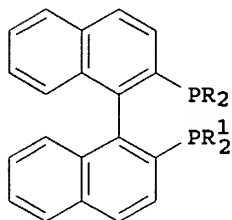
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
EP 754696	A1	19970122	EP 1996-305305	199607 19
			<--	
EP 754696	B1	20020116		
R: CH, DE, FR, GB, IT, LI				
JP 09031084	A2	19970204	JP 1995-206696	199507 21
			<--	
JP 3338243	B2	20021028		
US 5808162	A	19980915	US 1996-683199	199607 18
			<--	
PRIORITY APPLN. INFO.:			JP 1995-206696	A 199507 21

OTHER SOURCE(S): CASREACT 126:199669; MARPAT 126:199669
GI

AB Novel chiral unsym. diphosphine compds. I, wherein R and R1, which are different from each other, each represent a substituted or unsubstituted Ph group, a substituted or unsubstituted naphthyl group, a pyridyl group, a quinolyl group, an isoquinolyl group, a furfuryl group, a benzofurfuryl group, a thienyl group, or a benzothienyl group were prepd. Transition metal complexes contg. the

diphosphine compds. as ligands, where the complex catalyzes various asym. synthesis reactions, e.g., asym. hydrogenation or asym. hydrosilylation, exhibiting excellent performance in selectivity, conversion and catalytic activity, to provide a product of desired abs. configuration at high optical purity and in high yield were also prepd.

IT 132532-04-8P 187741-54-4P 187742-38-7P

187742-73-0P 187742-81-0P 187743-69-7P

187743-87-9P 187744-08-7P 187744-11-2P

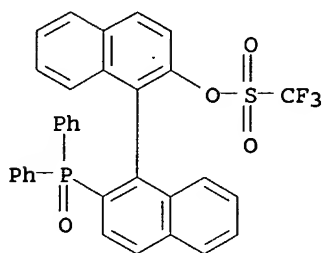
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(in prepn. of diphosphinobinaphthyl compd.)

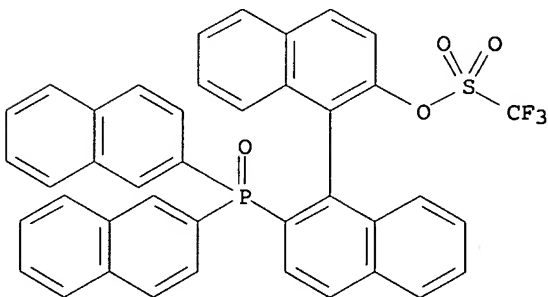
RN 132532-04-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphinyl)[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



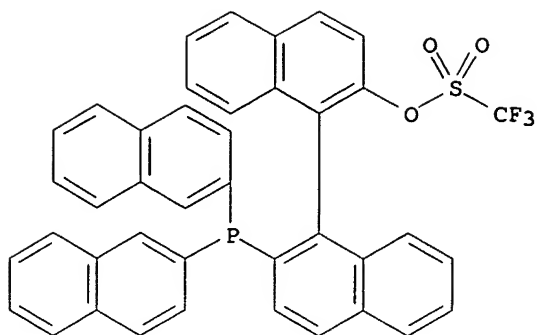
RN 187741-54-4 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1S)-2'-(di-2-naphthalenylphosphinyl)[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)

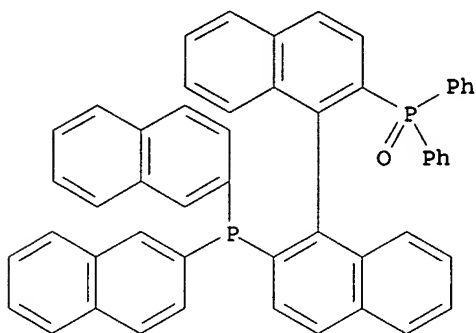


RN 187742-38-7 HCAPLUS

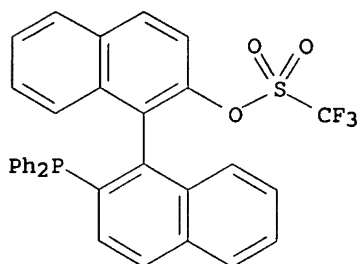
CN Methanesulfonic acid, trifluoro-, (1S)-2'-(di-2-naphthalenylphosphino)[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



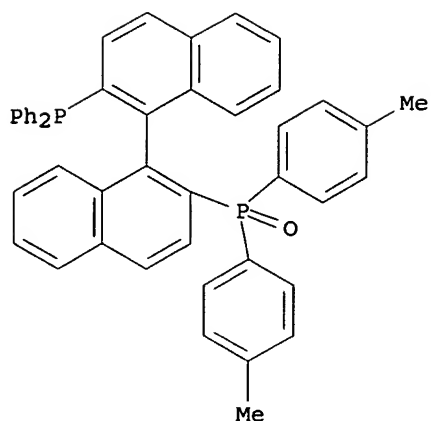
RN 187742-73-0 HCAPLUS
 CN Phosphine oxide, [2'-(di-2-naphthalenylphosphino)[1,1'-binaphthalen]-2-yl]diphenyl-, (S)- (9CI) (CA INDEX NAME)



RN 187742-81-0 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl (9CI) (CA INDEX NAME)

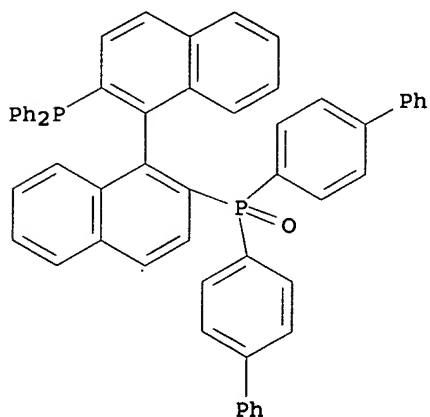


RN 187743-69-7 HCAPLUS
 CN Phosphine oxide, [2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)-, (R)- (9CI) (CA INDEX NAME)



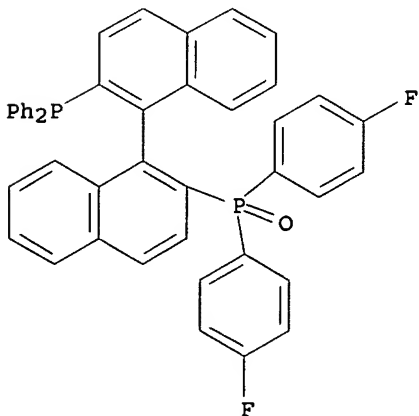
RN 187743-87-9 HCAPLUS

CN Phosphine oxide, bis([1,1'-biphenyl]-4-yl)[2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-, (R)- (9CI) (CA INDEX NAME)

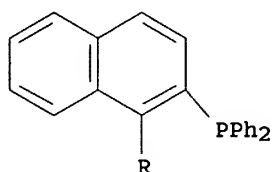
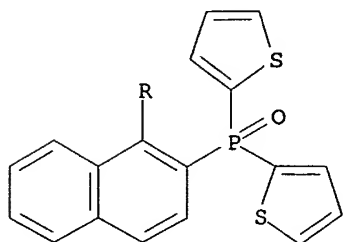


RN 187744-08-7 HCAPLUS

CN Phosphine oxide, [2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]bis(4-fluorophenyl)-, (R)- (9CI) (CA INDEX NAME)

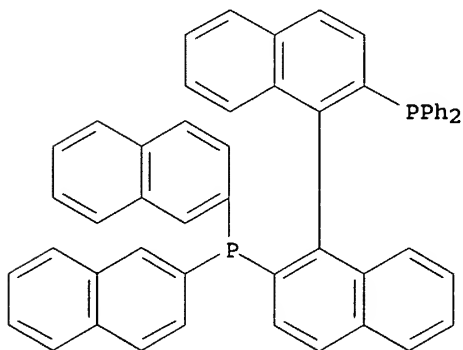


RN 187744-11-2 HCAPLUS
 CN Phosphine oxide, [2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]di-
 2-thienyl-, (R)- (9CI) (CA INDEX NAME)

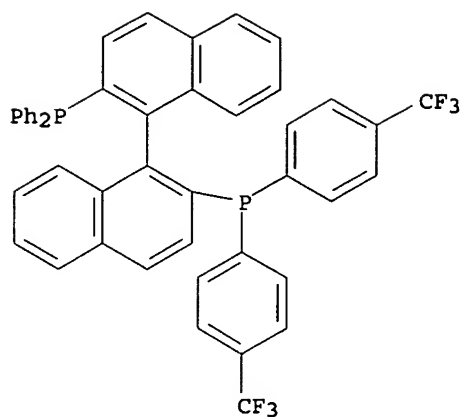


IT 187742-79-6P 187742-82-1P 187744-12-3P
 187744-13-4P 187744-14-5P 187744-15-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. and transition metal complexes from)

RN 187742-79-6 HCAPLUS
 CN Phosphine, [2'-(di-2-naphthalenylphosphino)[1,1'-binaphthalen]-2-yl]diphenyl-, (S)- (9CI) (CA INDEX NAME)

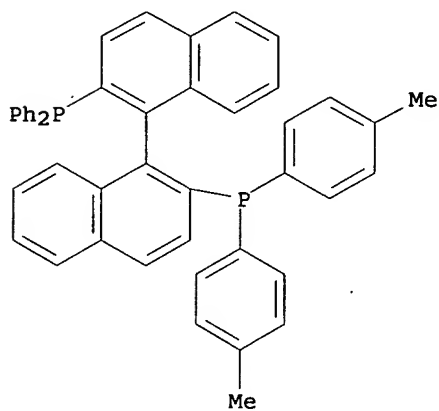


RN 187742-82-1 HCAPLUS
 CN Phosphine, [2'-[bis[4-(trifluoromethyl)phenyl]phosphino][1,1'-binaphthalen]-2-yl]diphenyl-, (R)- (9CI) (CA INDEX NAME)



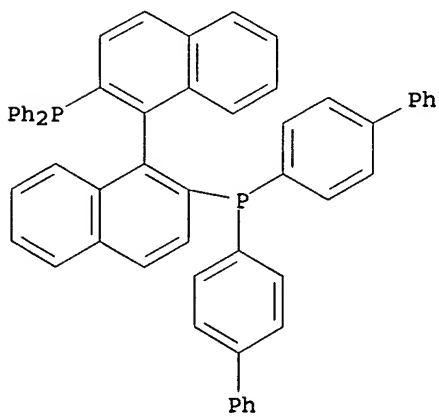
RN 187744-12-3 HCAPLUS

CN Phosphine, [2'-[bis(4-methylphenyl)phosphino][1,1'-binaphthalen]-2-yl]diphenyl-, (R)- (9CI) (CA INDEX NAME)



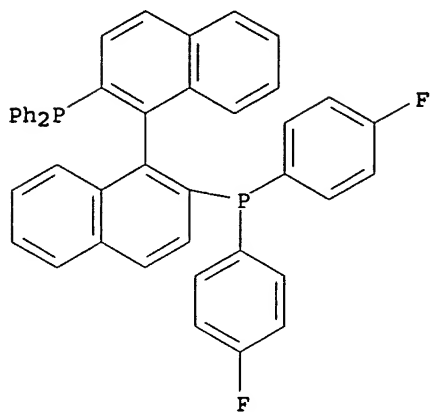
RN 187744-13-4 HCAPLUS

CN Phosphine, bis([1,1'-biphenyl]-4-yl)[2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-, (R)- (9CI) (CA INDEX NAME)



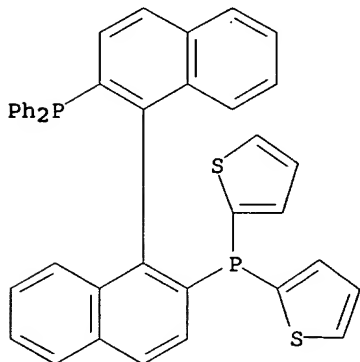
RN 187744-14-5 HCAPLUS

CN Phosphine, [2'-[bis(4-fluorophenyl)phosphino][1,1'-binaphthalen]-2-yl]diphenyl-, (R)- (9CI) (CA INDEX NAME)



RN 187744-15-6 HCAPLUS

CN Phosphine, [2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]di-2-thienyl-, (R)- (9CI) (CA INDEX NAME)



IT 187475-95-2P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

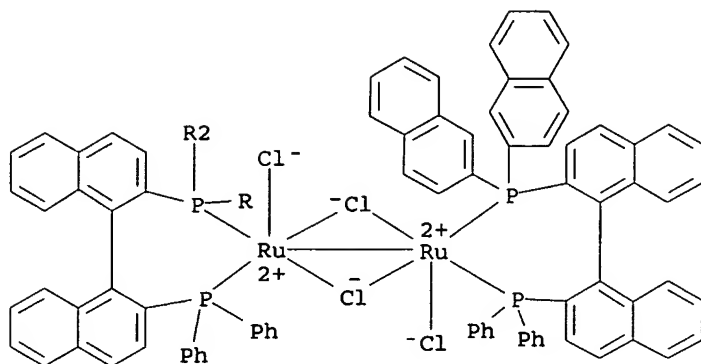
PREP (Preparation); USES (Uses)

(prepn. and use as an asym. hydrogenation catalyst)

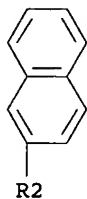
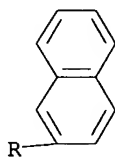
RN 187475-95-2 HCAPLUS

CN Ruthenium, di-μ-chlorodichlorobis[[(1S)-2'-(di-2-naphthalenylphosphino-κP)[1,1'-binaphthalen]-2-yl]diphenylphosphine-κP]di-, (Ru-Ru) (9CI) (CA INDEX NAME)

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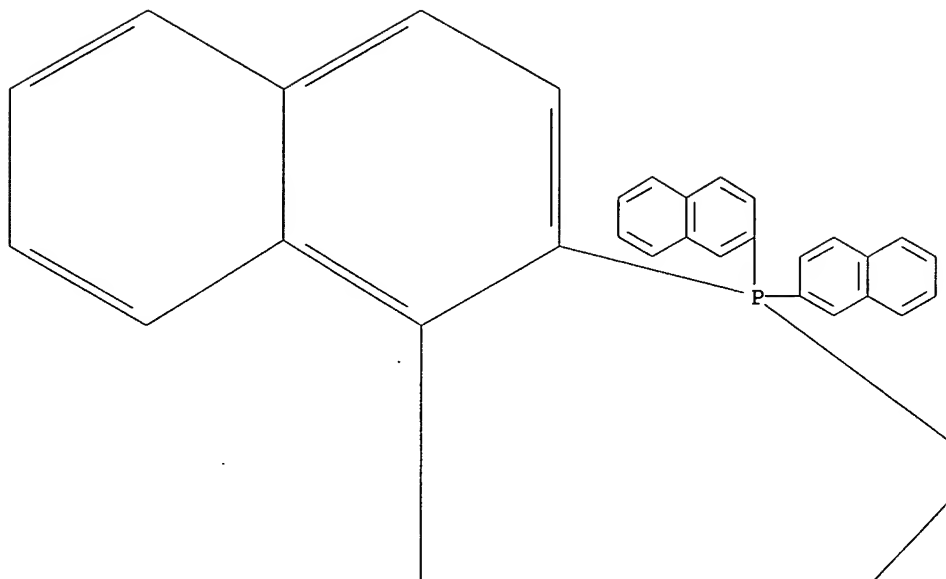


PAGE 2-A

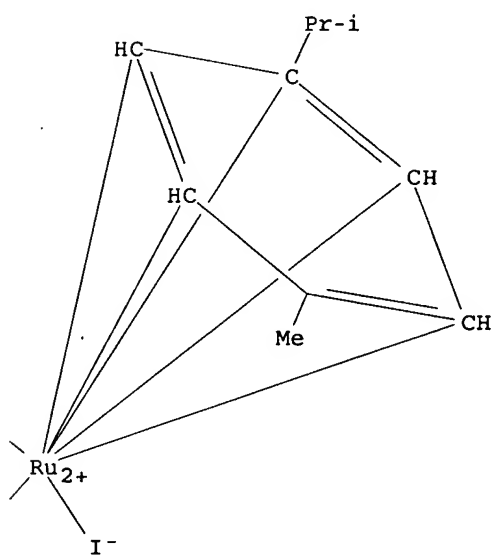


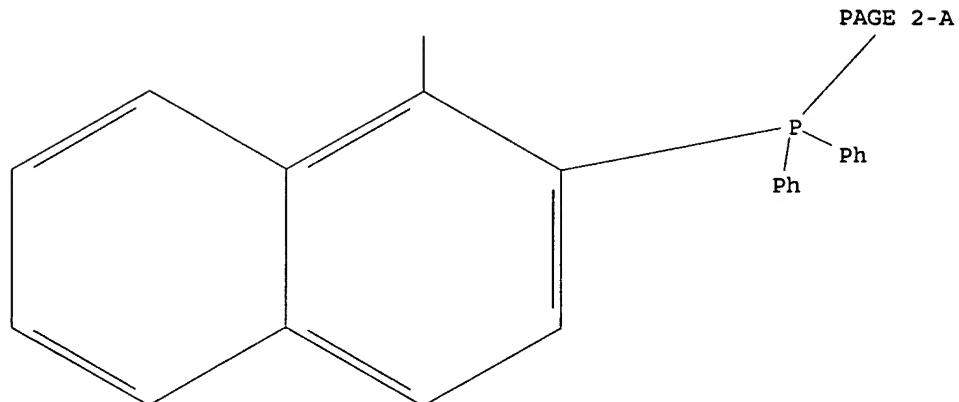
IT 187475-50-9P 187475-54-3P 187475-57-6P
 187475-62-3P 187475-65-6P 187475-69-0P
 187475-73-6P 187475-78-1P 187475-82-7P
 187475-86-1P 187475-89-4P 187475-93-0P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of)
 RN 187475-50-9 HCAPLUS
 CN Ruthenium(1+), [[2'-(di-2-naphthalenylphosphino-κP)[1,1'-binaphthalen]-2-yl]diphenylphosphine-κP]iodo[(1,2,3,5,6-η)-4-methyl-1-(1-methylethyl)benzene]-, iodide, stereoisomer (9CI) (CA INDEX NAME)

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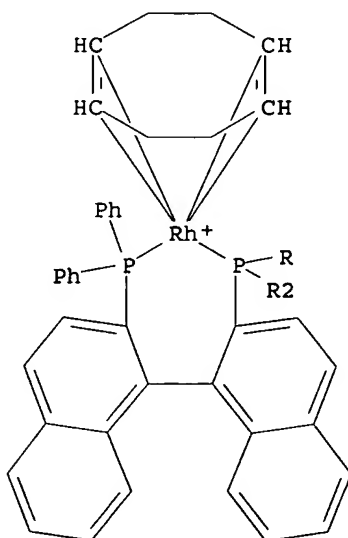


RN 187475-54-3 HCAPLUS
 CN Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][[2'-(di-2-naphthalenylphosphino-κP)[1,1'-binaphthalen]-2-yl]diphenylphosphine-κP]-, stereoisomer, tetrafluoroborate(1-)
 (9CI) (CA INDEX NAME)

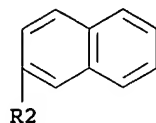
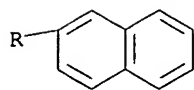
CM 1

CRN 187475-53-2
 CMF C60 H48 P2 Rh
 CCI CCS

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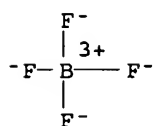


CM 2

CRN 14874-70-5

CMF B F4

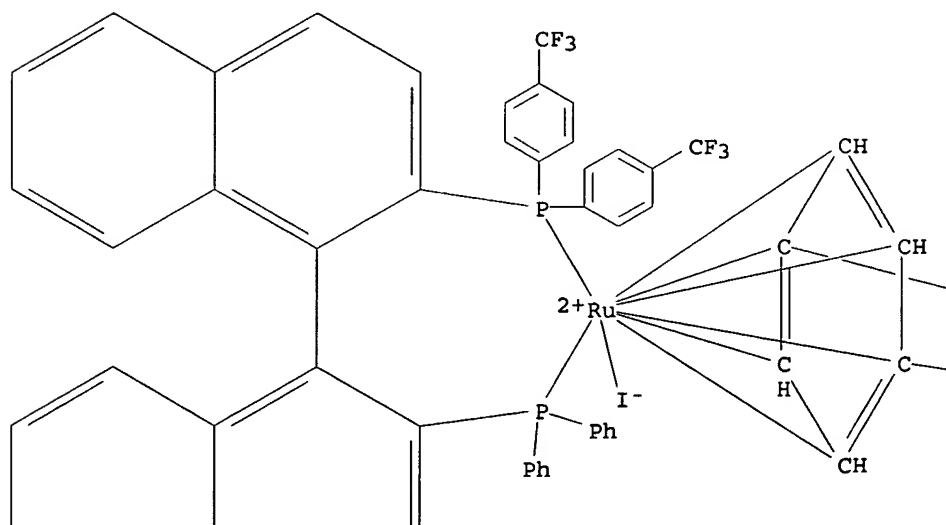
CCI CCS



RN 187475-57-6 HCAPLUS

CN Ruthenium(1+), [[2'-[bis[4-(trifluoromethyl)phenyl]phosphino-
 κP][1,1'-binaphthalen]-2-yl]diphenylphosphine-
 κP]iodo[(1,2,3,4,5,6-η)-1-methyl-4-(1-methylethyl)benzene]-
 , iodide, stereoisomer (9CI) (CA INDEX NAME)

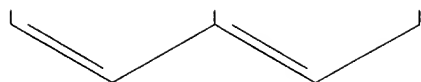
PAGE 1-A



PAGE 1-B

Pr-i

Me



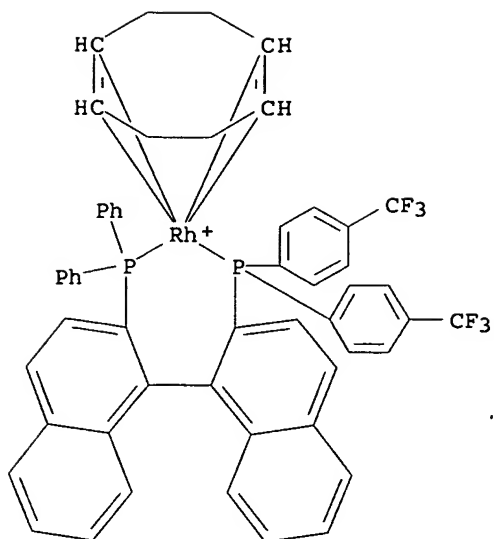
PAGE 2-A

● I⁻

RN 187475-62-3 HCAPLUS
CN Rhodium(1+), [[2'-[bis[4-(trifluoromethyl)phenyl]phosphino-
κP][1,1'-binaphthalen]-2-yl]diphenylphosphine-
κP][(1,2,5,6-η)-1,5-cyclooctadiene]-, stereoisomer,
tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 187475-61-2
CMF C54 H42 F6 P2 Rh
CCI CCS

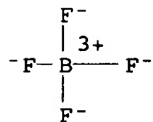


CM 2

CRN 14874-70-5

CMF B F4

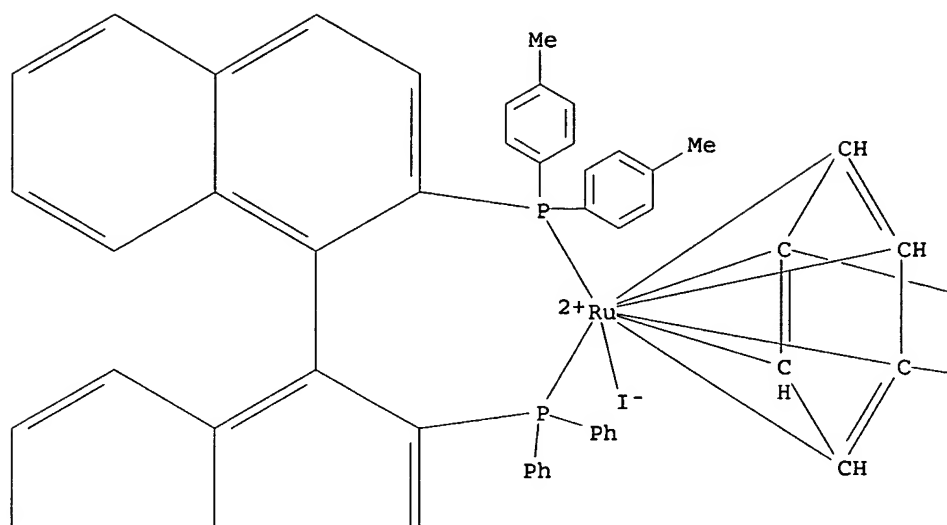
CCI CCS



RN 187475-65-6 HCAPLUS

CN Ruthenium(1+), [[(1R)-2'-[bis(4-methylphenyl)phosphino-
 κ P][1,1'-binaphthalen]-2-yl]diphenylphosphine-
 κ P]iodo[(1,2,3,4,5,6- η)-1-methyl-4-(1-methylethyl)benzene]-
 , iodide (9CI) (CA INDEX NAME)

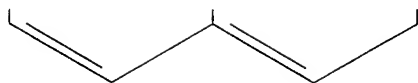
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Pr-i

Me



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RN 187475-69-0 HCAPLUS
 CN Rhodium(1+), [[[1R]-2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]diphenylphosphine-κP][(1,2,5,6-η)-1,5-

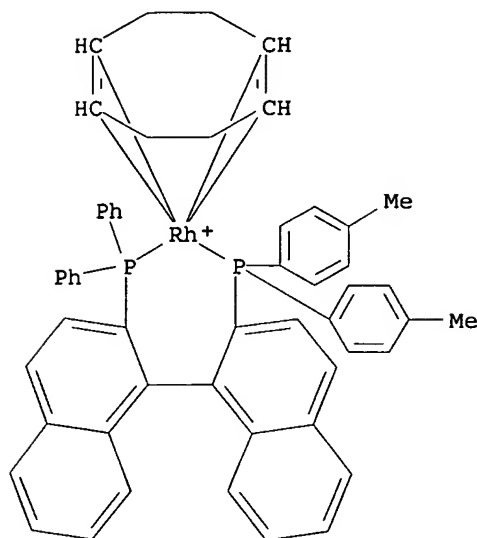
cyclooctadiene]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 187475-68-9

CMF C54 H48 P2 Rh

CCI CCS

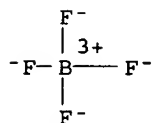


CM 2

CRN 14874-70-5

CMF B F4

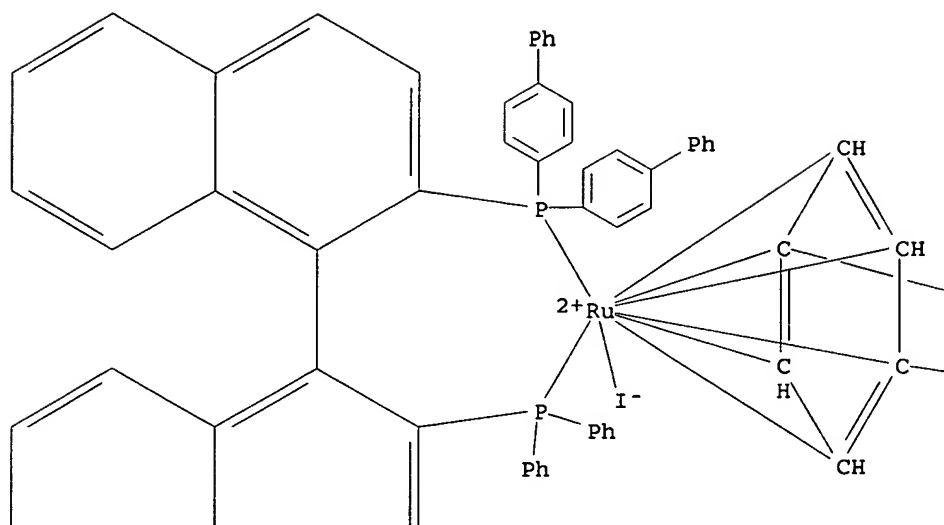
CCI CCS



RN 187475-73-6 HCAPLUS

CN Ruthenium(1+), [bis([1,1'-biphenyl]-4-yl) [(1R)-2'-(diphenylphosphino-κP) [1,1'-binaphthalen]-2-yl]phosphine-κP]iodo[(1,2,3,4,5,6-η)-1-methyl-4-(1-methylethyl)benzene]-, iodide (9CI) (CA INDEX NAME)

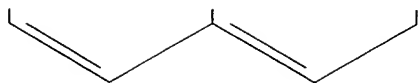
PAGE 1-A



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Pr-i

Me



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● I⁻

RN 187475-78-1 HCAPLUS
 CN Rhodium(1+), [bis([1,1'-biphenyl]-4-yl)[(1R)-2'-(diphenylphosphino-κP)[1,1'-binaphthalen]-2-yl]phosphine-κP][(1,2,5,6-

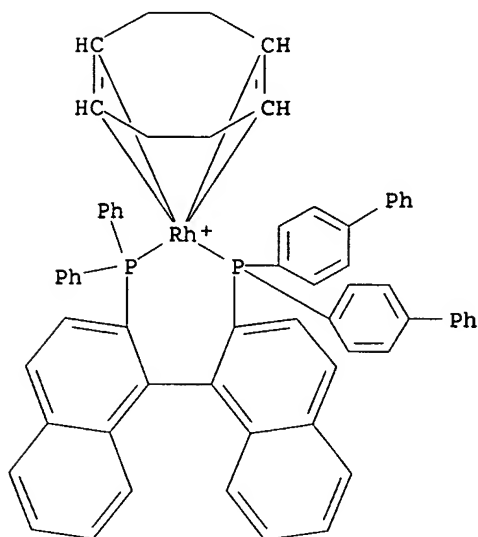
η -1,5-cyclooctadiene]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 187475-77-0

CMF C64 H52 P2 Rh

CCI CCS

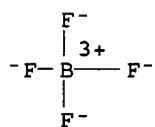


CM 2

CRN 14874-70-5

CMF B F4

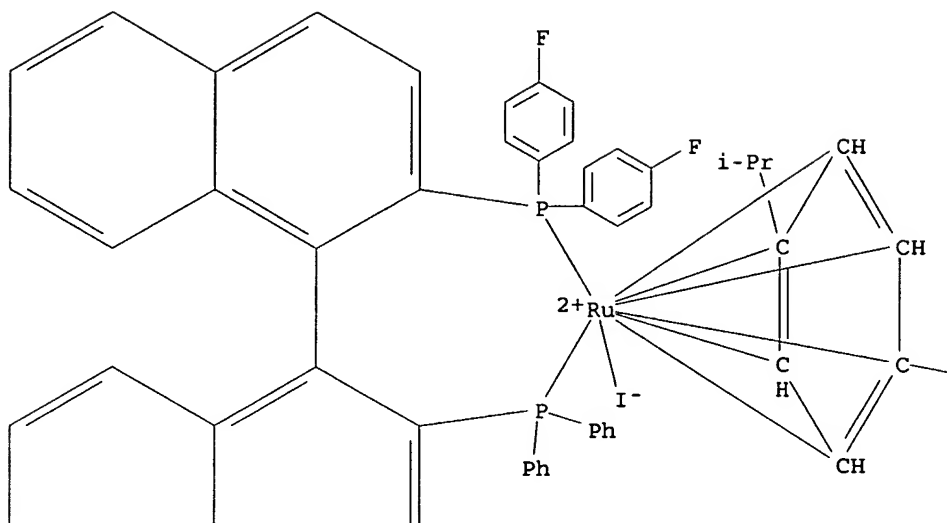
CCI CCS



RN 187475-82-7 HCAPLUS

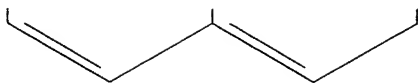
CN Ruthenium(1+), [[(1R)-2'-[bis(4-fluorophenyl)phosphino- κ P][1,1'-binaphthalen]-2-yl]diphenylphosphine- κ P]iodo[(1,2,3,4,5,6- η)-1-methyl-4-(1-methylethyl)benzene]-, iodide (9CI) (CA INDEX NAME)

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Me



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● I⁻

RN 187475-86-1 HCAPLUS
 CN Rhodium(1+), [[(1R)-2'-[bis(4-fluorophenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]diphenylphosphine-κP][(1,2,5,6-η)-1,5-

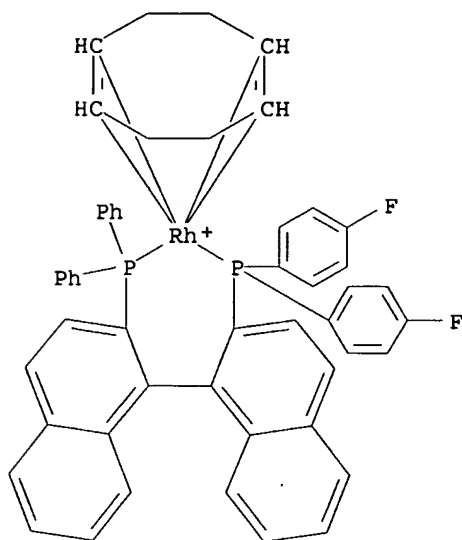
cyclooctadiene]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 187475-85-0

CMF C52 H42 F2 P2 Rh

CCI CCS

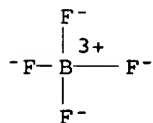


CM 2

CRN 14874-70-5

CMF B F4

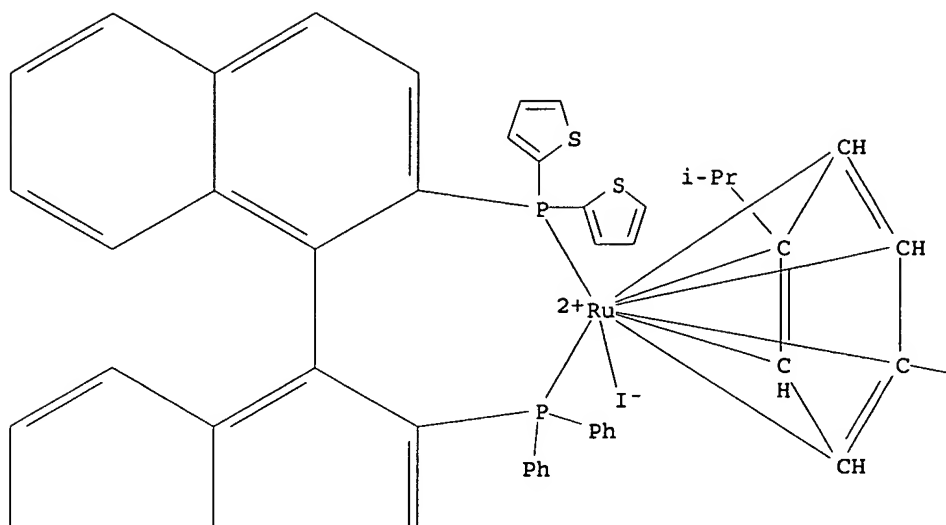
CCI CCS



RN 187475-89-4 HCAPLUS

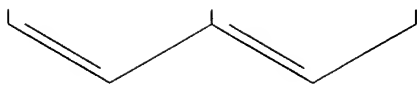
CN Ruthenium(1+), [[(1R)-2'-(diphenylphosphino-κP)[1,1'-binaphthalen]-2-yl]di-2-thienylphosphine-κP]iodo[(1,2,3,4,5,6-η)-1-methyl-4-(1-methylethyl)benzene]-, iodide (9CI) (CA INDEX NAME)

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Me



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● I⁻

RN 187475-93-0 HCAPLUS
 CN Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene[[[(1R)-2'-(diphenylphosphino-κP)[1,1'-binaphthalen]-2-yl]di-2-

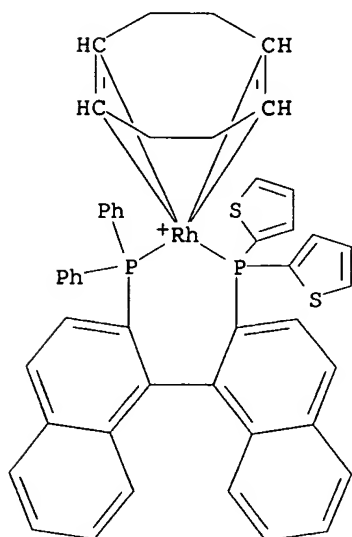
thienylphosphine-κP]]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 187475-92-9

CMF C48 H40 P2 Rh S2

CCI CCS

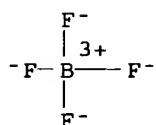


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



- IC ICM C07F009-50
ICS C07F009-53; C07F009-6553; C07F015-00; C07B053-00
- CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 25, 27
- IT 14647-23-5
RL: CAT (Catalyst use); USES (Uses)
(catalyst for prepn. of diphosphinobinaphthyl compds.)
- IT 128544-05-8P 132532-04-8P 187741-54-4P
187742-38-7P 187742-73-0P 187742-81-0P
187743-69-7P 187743-87-9P 187744-08-7P
187744-11-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(in prepn. of diphosphinobinaphthyl compd.)
- IT 187742-79-6P 187742-82-1P 187744-12-3P
187744-13-4P 187744-14-5P 187744-15-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)

(prepn. and transition metal complexes from)

IT 187475-95-2P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. and use as an asym. hydrogenation catalyst)

IT 76905-13-0P 187475-50-9P 187475-54-3P
 187475-57-6P 187475-62-3P 187475-65-6P
 187475-69-0P 187475-73-6P 187475-78-1P
 187475-82-7P 187475-86-1P 187475-89-4P
 187475-93-0P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of)

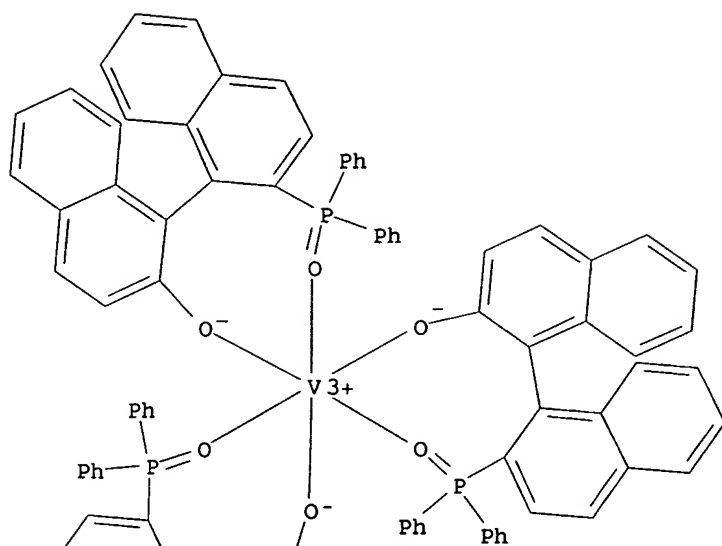
L26 ANSWER 55 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1997:10721 HCAPLUS
 DOCUMENT NUMBER: 126:126078
 TITLE: (R)- and (S)-2-Diphenylphosphinoyl-2'-hydroxy-
 1,1'-binaphthalene: versatile chiral bidentate
 ligands
 AUTHOR(S): Cross, Ronald J.; Farrugia, Louis J.; Newman,
 Paul D.; Peacock, Robert D.; Stirling, Diane
 CORPORATE SOURCE: Department Chemistry, University Glasgow,
 Glasgow, G128QQ, UK
 SOURCE: Journal of the Chemical Society, Dalton
 Transactions: Inorganic Chemistry (1996
), (23), 4449-4458
 CODEN: JCDBTBI; ISSN: 0300-9246
 PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The homochiral compds. (R)- and (S)-2-diphenylphosphinoyl-2'-hydroxy-
 1,1'-binaphthalene, (R)- and (S)-Hbinappo, react with $\text{TiCl}_4(\text{THF})_2$ or
 $\text{ZrCl}_4(\text{THF})_2$ to produce complexes of bidentate binappo-,
 $[\text{MCl}_2(\text{binappo})_2]$ ($\text{M} = \text{TiIV}$ or ZrIV). $\text{VCl}_3(\text{THF})_3$, FeCl_3 and MoO_2Cl_2
 also react with Hbinappo, but require the presence of a base to
 produce $[\text{M}(\text{binappo})_3]$ ($\text{M} = \text{VIII}$ or FeIII) or $[\text{MoO}_2(\text{binappo})_2]$.
 $[\text{MoO}_2(\text{acac})_2]$ ($\text{acac} = \text{acetylacetonate}$) reacts with Hbinappo to
 produce $[\text{MoO}_2(\text{acac})(\text{binappo})]$. The V(III) tris(chelate) complexes
 are readily oxidized in air to $[\text{VO}(\text{binappo})_2]$. All of these
 complexes were characterized by microanal., IR, and, where
 appropriate, NMR, electronic and CD spectroscopic techniques.
 (S)-Hbinappo, $[\text{ZrCl}_2\{(\text{S})\text{-binappo}\}_2]$, $[\text{V}\{(\text{S})\text{-binappo}\}_3]$ and
 $[\text{VO}\{(\text{S})\text{-binappo}\}_2]$ also were characterized by single crystal x-ray
 techniques. In all of the complexes the ligands are coordinated
 through their phenolate and phosphinoyl O atoms forming
 eight-membered chelate rings. The tris-chelate complexes form
 stereospecifically, (S)-binappo giving the Λ isomer
 exclusively, and the (R)-form producing Δ - $[\text{M}(\text{binappo})_3]$.
 Although each of the $[\text{M}(\text{binappo})_3]$ species are necessarily
 sterically crowded, little M-O bond elongation is obsd. in the
 single-crystal x-ray structure of $[\text{V}\{(\text{S})\text{binappo}\}_3]$. Initial
 attempts at achieving asym. induction in TiIV - and VOIV -based
 oxidns. of prochiral sulfides in the presence of these ligands are
 also presented, but obsd. enantiomeric excesses are generally $<10\%$.

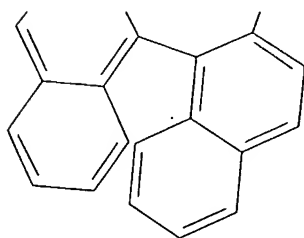
IT 186148-11-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. and air oxidn. of)

RN 186148-11-8 HCAPLUS
 CN Vanadium, tris[2'-(diphenylphosphinyl- κO)[1,1'-binaphthalen]-2-
 olato- κO]-, [OC-6-22- Δ -(R),(R),(R)]- (9CI) (CA INDEX
 NAME)

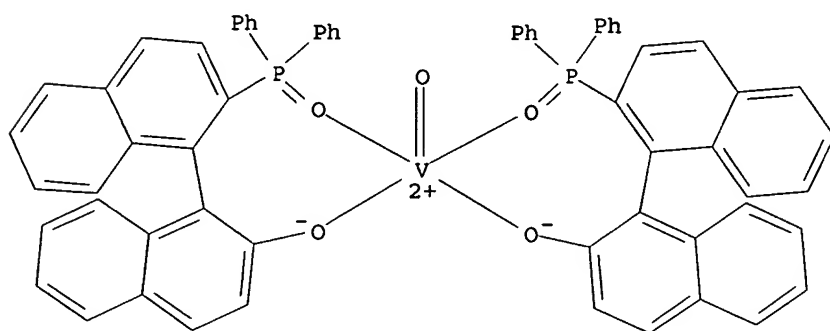
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IT 186148-12-9P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. and catalyst for attempted asym. oxidn. of sulfide to
 sulfoxide)
 RN 186148-12-9 HCAPLUS
 CN Vanadium, bis[2'-(diphenylphosphinyl-κO)[1,1'-binaphthalen]-2-
 olato-κO]oxo-, [SP-5-31-(R),(R)]- (9CI) (CA INDEX NAME)



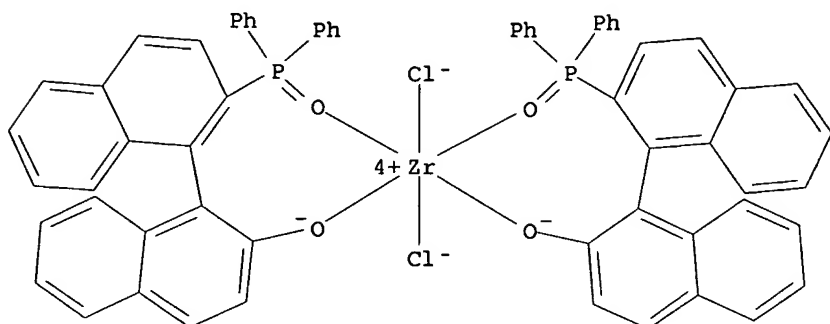
IT 186083-76-1P 186083-80-7P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(prepn. and crystal structure of)

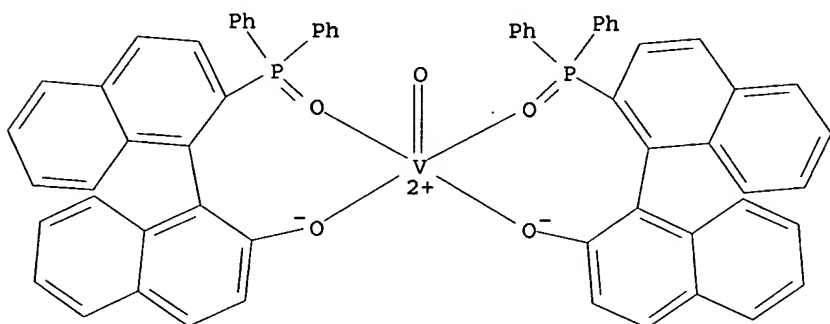
RN 186083-76-1 HCAPLUS

CN Zirconium, dichlorobis[2'-(diphenylphosphinyl- κ O) [1,1'-binaphthalen]-2-olato- κ O]-, [OC-6-32- Λ -(S),(S)]- (9CI) (CA INDEX NAME)



RN 186083-80-7 HCAPLUS

CN Vanadium, bis[2'-(diphenylphosphinyl- κ O) [1,1'-binaphthalen]-2-olato- κ O]oxo-, [SP-5-31-(S),(S)]- (9CI) (CA INDEX NAME)



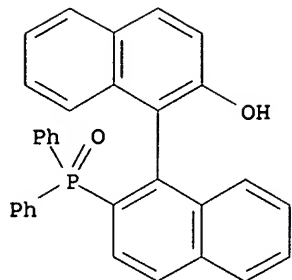
IT 186146-45-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. and reaction with ferric chloride)

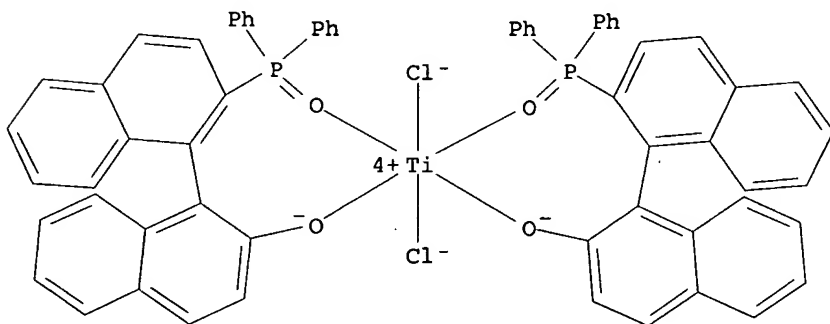
RN 186146-45-2 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-(diphenylphosphinyl)-, potassium salt, (S)- (9CI) (CA INDEX NAME)

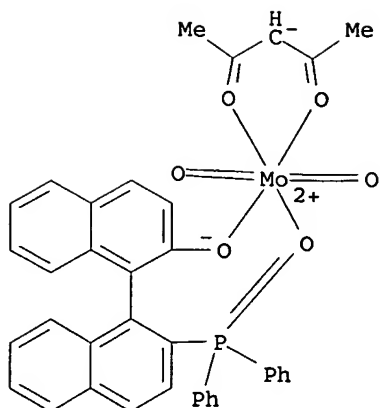


● K

IT 186083-75-0P 186083-77-2P 186083-78-3P
 186083-81-8P 186083-82-9P 186148-10-7P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of)
 RN 186083-75-0 HCAPLUS
 CN Titanium, dichlorobis[2'-(diphenylphosphinyl-κO) [1,1'-
 binaphthalen]-2-olato-κO]-, [OC-6-13-(S),(S)]- (9CI) (CA
 INDEX NAME)

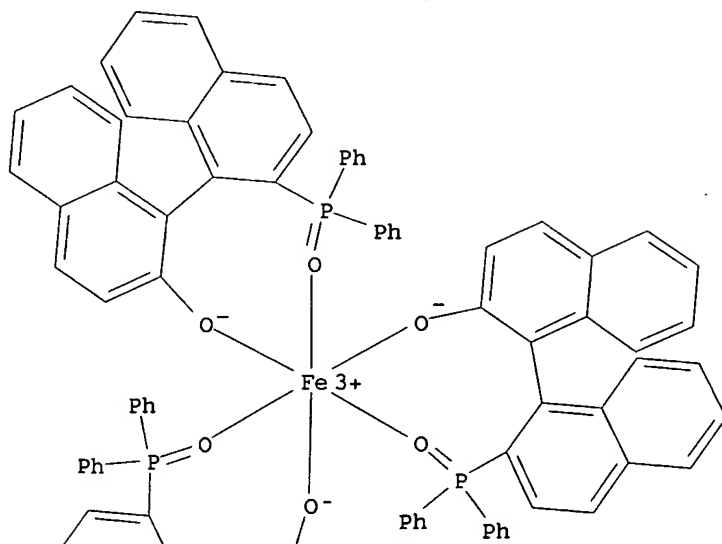


RN 186083-77-2 HCAPLUS
 CN Molybdenum, [2'-(diphenylphosphinyl-κO) [1,1'-binaphthalen]-2-
 olato-κO]dioxo(2,4-pentanedionato-κO,κO')-,
 [OC-6-44-(S)]- (9CI) (CA INDEX NAME)

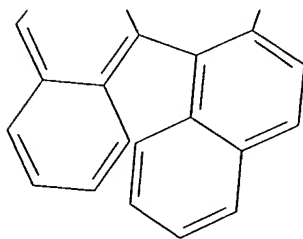


RN 186083-78-3 HCAPLUS
 CN Iron, tris[2'-(diphenylphosphinyl-κO) [1,1'-binaphthalen]-2-
 olato-κO]-, [OC-6-22-A-(S),(S),(S)]- (9CI) (CA INDEX
 NAME)

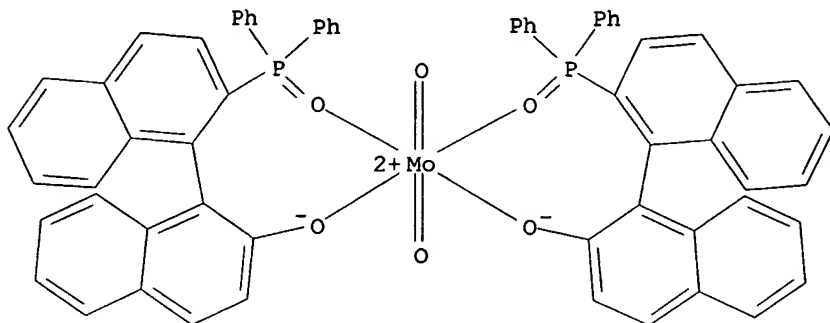
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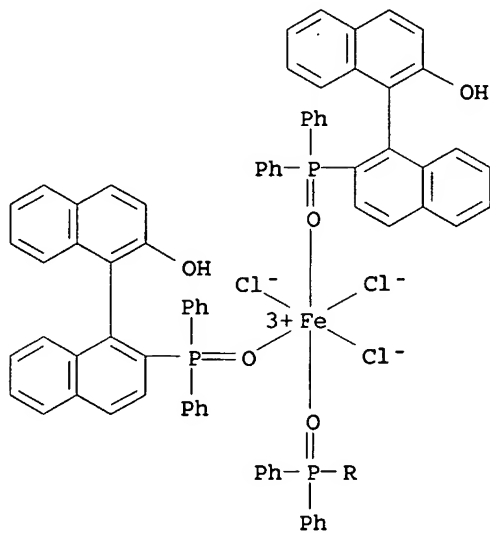


RN 186083-81-8 HCAPLUS
 CN Molybdenum, bis[2'-(diphenylphosphinyl-κO)[1,1'-binaphthalen]-2-olato-κO]dioxo-, [OC-6-33-(S),(S)]- (9CI) (CA INDEX NAME)

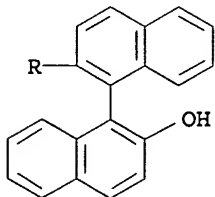


RN 186083-82-9 HCAPLUS
 CN Iron, trichlorotris[2'-(diphenylphosphinyl-κO)[1,1'-binaphthalen]-2-ol]-, [OC-6-22-(R),(R),(R)]- (9CI) (CA INDEX NAME)

PAGE 1-A



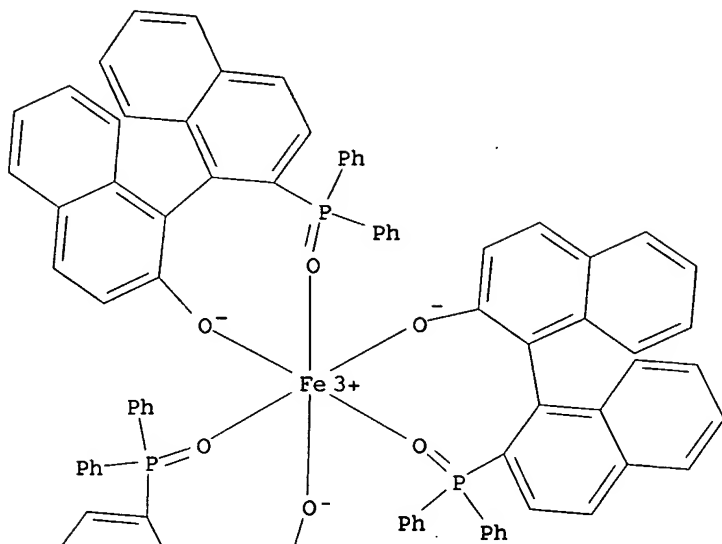
PAGE 2-A



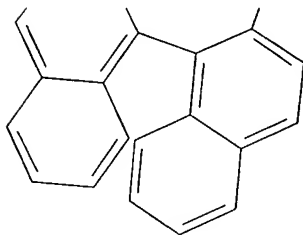
RN 186148-10-7 HCAPLUS
 CN Iron, tris[2'-(diphenylphosphinyl-κO)[1,1'-binaphthalen]-2-

olato- κ O]-, [OC-6-22- Δ -(R),(R),(R)]- (9CI) (CA INDEX
NAME)

PAGE 1-A

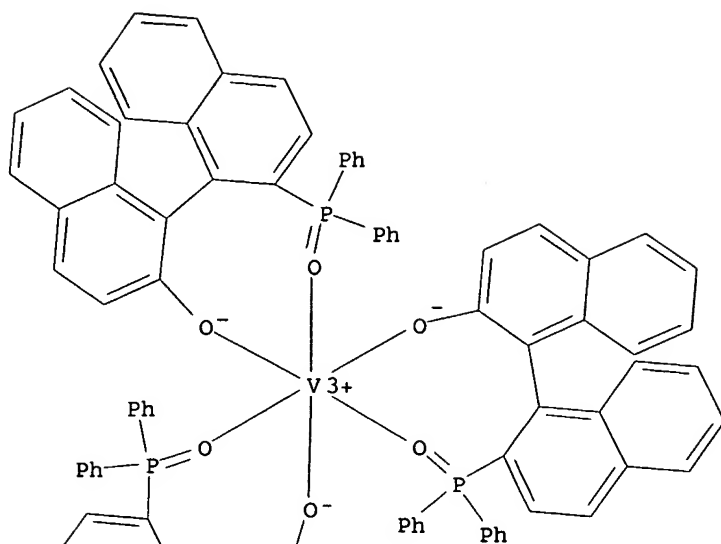


PAGE 2-A

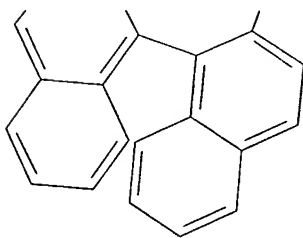


IT 186083-79-4P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);
 PREP (Preparation); RACT (Reactant or reagent)
 (prepn., air oxidn., and crystal structure of)
 RN 186083-79-4 HCAPLUS
 CN Vanadium, tris[2'-(diphenylphosphinyl- κ O)[1,1'-binaphthalen]-2-
 olato- κ O]-, [OC-6-22- Δ -(S),(S),(S)]- (9CI) (CA INDEX
 NAME)

PAGE 1-A



PAGE 2-A



- CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 67, 75
- ST crystal structure diphenylphosphinoylhydroxybinaphthalene titanium zirconium; structure diphenylphosphinoylhydroxybinaphthalene ligand titanium zirconium complex; binaphthalene diphenylphosphinoyl hydroxy chiral bidentate ligand; hydroxybinaphthylphosphine chiral transition metal complex prepn; transition metal diphenylphosphinoylhydroxybinaphthalene chiral prepn structure; oxidn catalyst asym diphenylphosphinoylhydroxybinaphthalene titanium vanadyl; chiral auxiliary diphenylphosphinoylhydroxybinaphthalene ligand oxidn catalyst
- IT Transition metal complexes
 RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (diphenylphosphinoyl(hydroxy)binaphthalene; prepn., crystal structure, and catalysts for attempted asym. oxidn. of sulfide to sulfoxide)
- IT 546-68-9, Titanium isopropoxide
 RL: CAT (Catalyst use); USES (Uses)
 (attempted asym. oxidn. of sulfide to sulfoxide catalyzed by metal complexes contg. homochiral diphenylphosphinoylhydroxybinaphthalene ligand)

IT 132548-91-5
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (complexation with transition metals, and chiral auxiliary in attempted catalytic asym. oxidn. of sulfide to sulfoxide with titanium isopropoxide)

IT 137769-33-6
 RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (crystal structure, complexation with transition metals, and chiral auxiliary in attempted catalytic asym. oxidn. of sulfide to sulfoxide with titanium isopropoxide)

IT 186148-11-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and air oxidn. of)

IT 186148-12-9P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. and catalyst for attempted asym. oxidn. of sulfide to sulfoxide)

IT 186083-76-1P 186083-80-7P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (prepn. and crystal structure of)

IT 186146-45-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and reaction with ferric chloride)

IT 186083-75-0P 186083-77-2P 186083-78-3P
 186083-81-8P 186083-82-9P 186148-10-7P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of)

IT 186083-79-4P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn., air oxidn., and crystal structure of)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 56 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1996:618808 HCAPLUS
 DOCUMENT NUMBER: 125:248106
 TITLE: Optically active asymmetric diphosphines and process for producing optically active substance in its presence
 INVENTOR(S): Takaya, Hidemasa; Ota, Tetsuo; Inagaki, Koji
 PATENT ASSIGNEE(S): Takasago International Corporation, Japan
 SOURCE: Eur. Pat. Appl., 11 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 732337	A1	19960918	EP 1996-301720	19960313
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EP 732337	B1	20000906		
R: CH, DE, FR, GB, IT, LI				
JP 08245664	A2	19960924	JP 1995-80836	

199503
14

US 5648548

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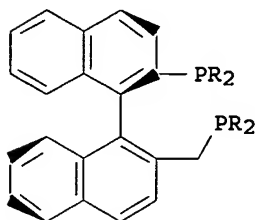
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US 1996-615001199603
13

PRIORITY APPLN. INFO.:

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JP 1995-80836

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199503
14OTHER SOURCE(S):
GI<--
CASREACT 125:248106; MARPAT 125:248106

I

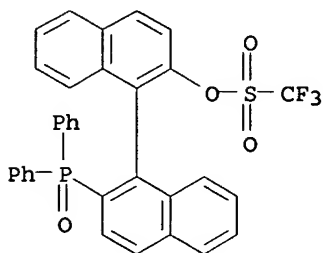
AB An optically active 2-diphenylphosphinomethyl-2'-diphenylphosphino-1,1'-binaphthalene deriv. represented by the general formula (I) wherein R represents a Ph group, a tolyl group, an anisyl group or a chlorophenyl group, and a process for the prodn. of optically active substances in which the above compd. and a **transition metal** compd. were used is described. The asym. **diphosphine** of the present invention is related to the creation of novel compds., which is excellent as a **ligand** for asym. **synthesis** use. When the above compds. were used together with a **transition metal** compd. such as of Ru, Rh or the like, it shows markedly excellent properties as a catalyst of asym. hydrogenation and the like reactions, in terms of selectivity, conversion ratio, catalytic activity and the like.

IT 132532-04-8P 156456-68-7P 156456-69-8P
156456-71-2P 156456-73-4P 182115-73-7P
182115-74-8P 182115-75-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and bis(diphenylphosphino)binaphthalene from)

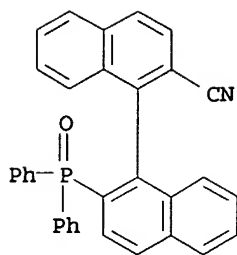
RN 132532-04-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphinyl)[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



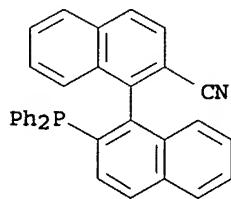
RN 156456-68-7 HCAPLUS

CN [1,1'-Binaphthalene]-2-carbonitrile, 2'-(diphenylphosphinyl)-, (1R)- (9CI) (CA INDEX NAME)



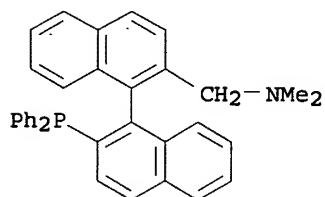
RN 156456-69-8 HCAPLUS

CN [1,1'-Binaphthalene]-2-carbonitrile, 2'-(diphenylphosphino)-, (R)-
(9CI) (CA INDEX NAME)



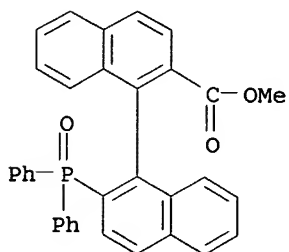
RN 156456-71-2 HCAPLUS

CN [1,1'-Binaphthalene]-2-methanamine, 2'-(diphenylphosphino)-N,N-dimethyl-, (R)- (9CI) (CA INDEX NAME)



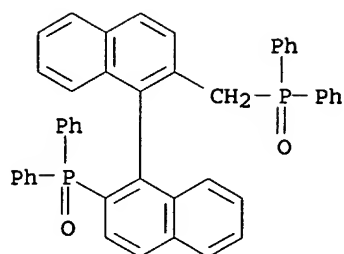
RN 156456-73-4 HCAPLUS

CN [1,1'-Binaphthalene]-2-carboxylic acid, 2'-(diphenylphosphinyl)-, methyl ester, (R)- (9CI) (CA INDEX NAME)



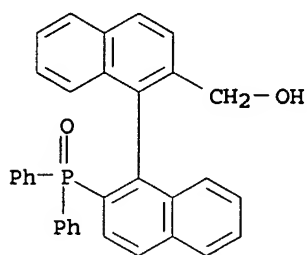
RN 182115-73-7 HCAPLUS

CN Phosphine oxide, [(2'-(diphenylphosphinyl)[1,1'-binaphthalen]-2-yl)methyl]diphenyl-, (R)- (9CI) (CA INDEX NAME)



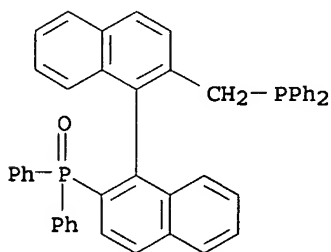
RN 182115-74-8 HCAPLUS

CN [1,1'-Binaphthalene]-2-methanol, 2'-(diphenylphosphinyl)-, (R)-
(9CI) (CA INDEX NAME)



RN 182115-75-9 HCAPLUS

CN Phosphine oxide, [[2'-(diphenylphosphino)methyl][1,1'-binaphthalen]-2-yl]diphenyl-, (R)- (9CI) (CA INDEX NAME)



IT 182115-72-6P

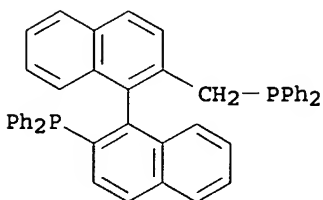
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. and catalysts for asym. hydrogenation)

RN 182115-72-6 HCAPLUS

CN Phosphine, [[2'-(diphenylphosphino)methyl][1,1'-binaphthalen]-2-yl]methyl]diphenyl-, (R)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50

ICS C07B053-00; C07C005-03; B01J031-24
 ICI C07M007-00
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 25
 IT 12092-47-6, Chloro(cyclooctadiene)rhodium dimer
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst contg. bis(diphenylphosphino)binaphthalene for asym.
 hydrogenation of styrenes)
 IT 182179-31-3P 182179-32-4P 182179-33-5P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (optically active; prepn. and catalysts for asym. hydrogenation)
 IT 126613-06-7P, (R)-2,2'-Bis(trifluoromethanesulfonyloxy)-1,1'-
 binaphthyl 126613-07-8P 132532-04-8P
 156456-68-7P 156456-69-8P 156456-71-2P
 156456-73-4P 182115-73-7P 182115-74-8P
 182115-75-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. and bis(diphenylphosphino)binaphthalene from)
 IT 182115-72-6P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. and catalysts for asym. hydrogenation)

L26 ANSWER 57 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:610021 HCAPLUS

DOCUMENT NUMBER: 125:248105

TITLE: Optically active tertiary phosphine
 compounds, transition metal
 complexes comprising the same as ligands
 and process for preparing optically
 active organic silicon compounds using said
 transition metal complexes

INVENTOR(S): Hayashi, Tamio; Minai, Masayoshi; Iwakura,
 Kazunori

PATENT ASSIGNEE(S): Sumitomo Chemical Company Limited, Japan

SOURCE: Eur. Pat. Appl., 20 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 731105	A1	19960911	EP 1996-103689	199603 08
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EP 731105	B1	20011205		
R: CH, DE, GB, LI	LI			
JP 08245662	A2	19960924	JP 1995-51094	199503 10
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JP 08245663	A2	19960924	JP 1995-51482	199503 10
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JP 09143185	A2	19970603	JP 1996-44680	199603 01
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JP 3463450	B2	20031105		

US 5621129

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19970415

US 1996-612108

199603
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PRIORITY APPLN. INFO.:

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JP 1995-49685

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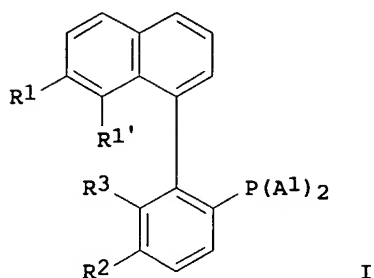
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JP 1995-51482

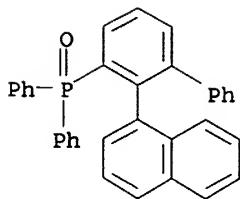
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JP 1995-238204

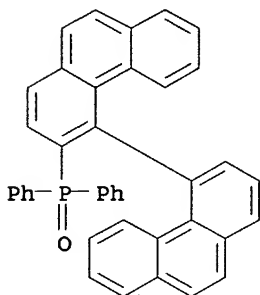
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199509
18OTHER SOURCE(S):
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CASREACT 125:248105; MARPAT 125:248105

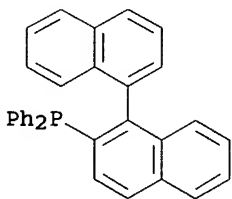
- AB The prepn. of tertiary phosphine compds. I ($R_1, R_1' = H, R_1R_1' = CH:CHCH:CH$; $R_2R_3 = 2-CH:CHC_6H_4$, etc.; $R_2 = H, R_3 =$ substituted or unsubstituted alkyl, Ph group, etc.; $A_1 = 3$ -trifluoromethylphenyl or 3,5-bis(trifluoromethyl)phenyl, etc.) was given. I was used as cocatalyst to prep. optically active silicon compd. Thus, (S)-3-diphenylphosphino-4,4'-biphenanthryl (prepn. given)/allylpalladium chloride dimer catalyzed silylation of styrene with trichlorosilane gave 1-phenyl-1-trichlorosilylethene. Oxidative desilylation of 1-phenyl-1-trichlorosilylethene with $KF/KHCO_3/H_2O_2$ in THF/MeOH gave optically pure (R)-1-phenethyl alc. in 95% yield.
- IT 170647-33-3P 181934-58-7P, (S)-3-Diphenylphosphinyl-4,4'-biphenanthryl
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (prepn. and deoxygenation of)
- RN 170647-33-3 HCAPLUS
- CN Phosphine oxide, [(2S)-2-(1-naphthalenyl)[1,1'-biphenyl]-3-yl]diphenyl- (9CI) (CA INDEX NAME)



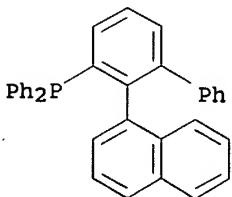
RN 181934-58-7 HCAPLUS
 CN Phosphine oxide, [4,4'-biphenanthren]-3-ylidiphenyl-, (S)- (9CI) (CA INDEX NAME)



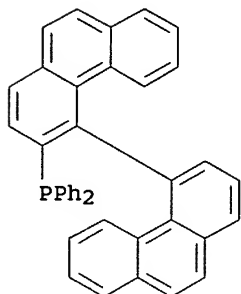
IT 156456-77-8P 170647-35-5P 181934-60-1P,
 (S)-3-Diphenylphosphino-4,4'-biphenanthryl 181934-89-4P
 181934-90-7P 181934-92-9P 181934-94-1P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of optically active tertiary phosphine compds. as
 cocatalysts for prepg. optically active org. silicon compds.)
 RN 156456-77-8 HCAPLUS
 CN Phosphine, (1S)-[1,1'-binaphthalen]-2-ylidiphenyl- (9CI) (CA INDEX NAME)



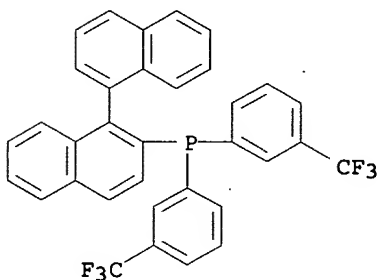
RN 170647-35-5 HCAPLUS
 CN Phosphine, [(2S)-2-(1-naphthalenyl)[1,1'-biphenyl]-3-yl]diphenyl- (9CI) (CA INDEX NAME)



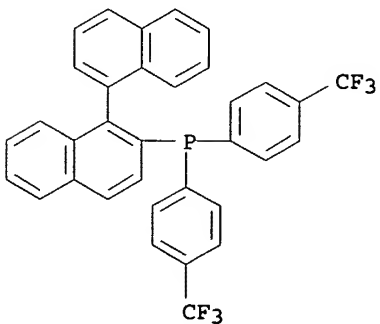
RN 181934-60-1 HCAPLUS
CN Phosphine, [4,4'-biphenanthren]-3-ylidiphenyl-, (S)- (9CI) (CA INDEX NAME)



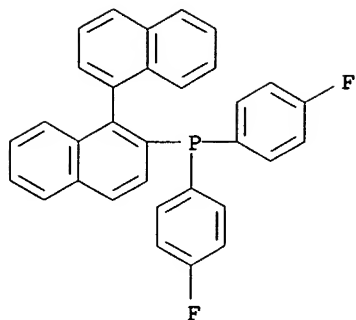
RN 181934-89-4 HCAPLUS
CN Phosphine, [1,1'-binaphthalen]-2-ylbis[3-(trifluoromethyl)phenyl]-, (S)- (9CI) (CA INDEX NAME)



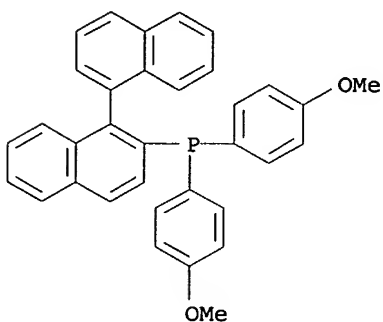
RN 181934-90-7 HCAPLUS
CN Phosphine, [1,1'-binaphthalen]-2-ylbis[4-(trifluoromethyl)phenyl]-, (S)- (9CI) (CA INDEX NAME)



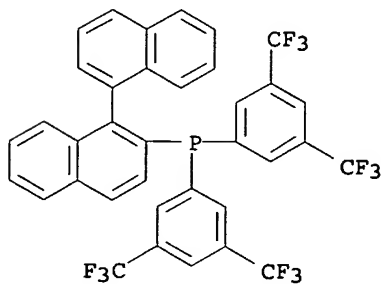
RN 181934-92-9 HCAPLUS
CN Phosphine, [1,1'-binaphthalen]-2-ylbis(4-fluorophenyl)-, (S)- (9CI) (CA INDEX NAME)



RN 181934-94-1 HCAPLUS
 CN Phosphine, [1,1'-binaphthalen]-2-ylbis(4-methoxyphenyl)-, (S)- (9CI)
 (CA INDEX NAME)



IT 181934-84-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
 (Preparation); RACT (Reactant or reagent)
 (prepn. of optically active tertiary phosphine compds. as
 cocatalysts for prepg. optically active org. silicon compds.)
 RN 181934-84-9 HCAPLUS
 CN Phosphine, [1,1'-binaphthalen]-2-ylbis[3,5-
 bis(trifluoromethyl)phenyl]-, (S)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
 ICS B01J031-28; C07F015-00; C07F007-12
 ICI C07M007-00
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 25, 67
 IT 85719-57-9
 RL: **CAT** (Catalyst use); **USES** (Uses)

(Grignard phenylation of naphthylbis(trifluoromethanesulfonyloxy) benzene with phenylmagnesium bromide catalyzed by)

IT 7688-25-7, 1,4-Bis(diphenylphosphino)butane
 RL: CAT (Catalyst use); USES (Uses)
 (palladium-catalyzed phosphinylation of naphthylbis(trifluoromethanesulfonyloxy)benzene with diphenylphosphine oxide in presence of)

IT 170647-33-3P 181934-58-7P, (S)-3-Diphenylphosphinyl-4,4'-biphenanthryl
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and deoxygenation of)

IT 12012-95-2, Allylpalladium chloride dimer 145964-33-6
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of optically active tertiary phosphine compds. as cocatalysts for prepg. optically active org. silicon compds.)

IT 156456-77-8P 170647-35-5P 181934-60-1P, (S)-3-Diphenylphosphino-4,4'-biphenanthryl 181934-89-4P 181934-90-7P 181934-92-9P 181934-94-1P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. of optically active tertiary phosphine compds. as cocatalysts for prepg. optically active org. silicon compds.)

IT 181934-84-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. of optically active tertiary phosphine compds. as cocatalysts for prepg. optically active org. silicon compds.)

L26 ANSWER 58 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:169300 HCAPLUS

DOCUMENT NUMBER: 124:343650

TITLE: Optically active tertiary phosphines, their metal complexes, and preparation of optically active organosilicon compounds

INVENTOR(S): Iwakura, Kazunori; Minamii, Masayoshi

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 07330786	A2	19951219	JP 1994-127786	19940609

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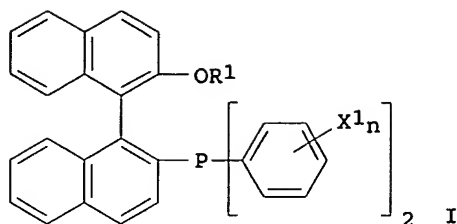
PRIORITY APPLN. INFO.: JP 1994-127786

19940609

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OTHER SOURCE(S): CASREACT 124:343650; MARPAT 124:343650

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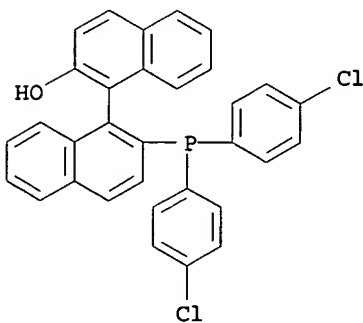
AB The tertiary phosphines I (R1 = H, lower alkyl which may be substituted with halo, lower alkoxy, Ph; X1 = halo; n = 1-5) and transition metal complexes having I as the ligands are claimed. Also claimed is a method for the prepn. of optically active R2R3CHCR4R5SiX2X3X4 (R2-5 = alkyl, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, alkoxy, H; 2 of them may be linked each other to form a ring; X2-4 = H, alkyl, alkoxy, halo), useful as synthetic intermediates, by treatment of R2R3C:CR4R5 with X2X3X4SiH in the presence of transition metal complexes having I as the ligands.

(4-ClC6H4)2P(O)H (prepn. given) was treated with (R)-2,2'-bis(trifluoromethanesulfonyloxy)-1,1'-binaphthyl (prepn. given) to give (R)-2-trifluoromethanesulfonyloxy-2'-bis(4-chlorophenyl)phosphinoyl-1,1'-binaphthyl, which was hydrolyzed followed by O-methylation and redn. to give (R)-I (R1 = Me, X1 = 4-Cl) (II). A toluene soln. of allylpalladium chloride dimer and II was treated with norbornene and SiHCl3 under stirring for 12 h to give 97% (1S,2S,4R)-2-trichlorosilylnorbornane with 95% e.e., vs. 95 and 89% e.e. for a control prepd. using (R)-(+)-2-diphenylphosphino-2'-methoxy-1,1'-binaphthyl as a ligand.

IT 176370-78-8P, (R)-2-Hydroxy-2'-[bis(4-chlorophenyl)phosphino]-1,1'-binaphthyl
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 ([bis(halophenyl)phosphino]binaphthyl transition metal complexes as asym. hydrosilylation catalysts)

RN 176370-78-8 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-[bis(4-chlorophenyl)phosphino]-, (R)-
 (9CI) (CA INDEX NAME)

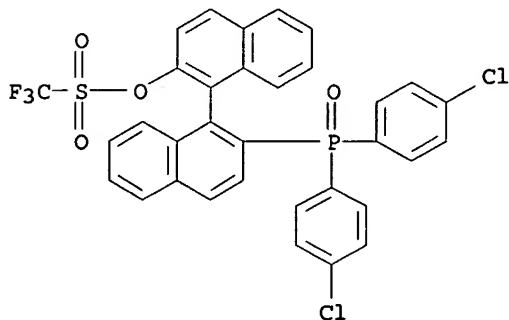


IT 176370-75-5P, (R)-2-(Trifluoromethanesulfonyloxy)-2'-[bis(4-chlorophenyl)phosphinoyl]-1,1'-binaphthyl 176370-76-6P,
 (R)-2-Hydroxy-2'-[bis(4-chlorophenyl)phosphinoyl]-1,1'-binaphthyl
 176370-77-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)

((bis(halophenyl)phosphino)binaphthyl transition metal complexes
as asym. hydrosilylation catalysts)

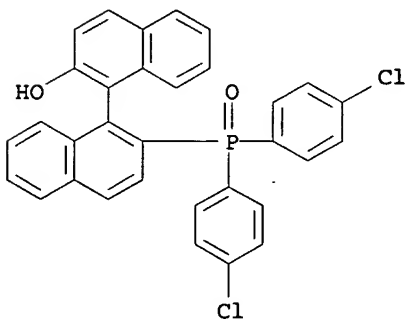
RN 176370-75-5 HCAPLUS

CN Methanesulfonic acid, trifluoro-, 2'-[bis(4-chlorophenyl)phosphinyl][1,1'-binaphthalen]-2-yl ester, (R)- (9CI)
(CA INDEX NAME)



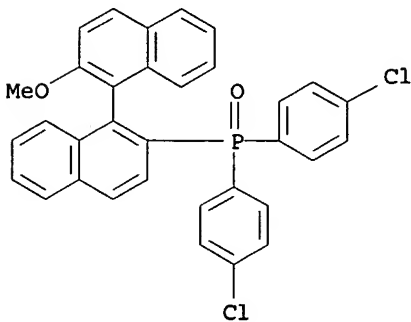
RN 176370-76-6 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-[bis(4-chlorophenyl)phosphinyl]-, (R)- (9CI) (CA INDEX NAME)



RN 176370-77-7 HCAPLUS

CN Phosphine oxide, bis(4-chlorophenyl) (2'-methoxy[1,1'-binaphthalen]-2-yl)-, (R)- (9CI) (CA INDEX NAME)



IT 165730-08-5P, (R)-2-Methoxy-2'-[bis(4-chlorophenyl)phosphino]-1,1'-binaphthyl

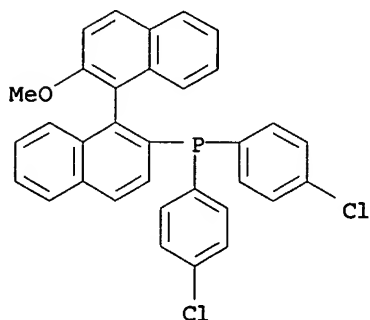
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(catalysts contg. allylpalladium chloride dimer;
[bis(halophenyl)phosphino]binaphthyl transition metal complexes
as asym. hydrosilylation catalysts)

RN 165730-08-5 HCAPLUS

CN Phosphine, bis(4-chlorophenyl) (2'-methoxy[1,1'-binaphthalen]-2-yl)-,
(R)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50

ICS B01J031-18; C07F007-14; C07F007-18

ICA C07B061-00

ICI C07M007-00

CC 29-6 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 67

IT 176370-78-8P, (R)-2-Hydroxy-2'-[bis(4-chlorophenyl)phosphino]-1,1'-binaphthyl

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

([bis(halophenyl)phosphino]binaphthyl transition metal complexes
as asym. hydrosilylation catalysts)

IT 15948-60-4P, Bis(4-chlorophenyl)phosphine oxide 126613-06-7P,

(R)-2,2'-Bis(trifluoromethanesulfonyloxy)-1,1'-binaphthyl

176370-75-5P, (R)-2-(Trifluoromethanesulfonyloxy)-2'-[bis(4-

chlorophenyl)phosphino]-1,1'-binaphthyl 176370-76-6P,

(R)-2-Hydroxy-2'-[bis(4-chlorophenyl)phosphino]-1,1'-binaphthyl

176370-77-7P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP****(Preparation); RACT (Reactant or reagent)**

([bis(halophenyl)phosphino]binaphthyl transition metal complexes
as asym. hydrosilylation catalysts)

IT 12012-95-2, Allylpalladium chloride dimer

RL: CAT (Catalyst use); USES (Uses)

(catalysts contg. (R)-2-methoxy-2'-[bis(4-chlorophenyl)phosphino]-
1,1'-binaphthyl; asym. hydrosilylation catalyst)

IT 165730-08-5P, (R)-2-Methoxy-2'-[bis(4-chlorophenyl)phosphino]-1,1'-binaphthyl

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(catalysts contg. allylpalladium chloride dimer;

[bis(halophenyl)phosphino]binaphthyl transition metal complexes
as asym. hydrosilylation catalysts)

L26 ANSWER 59 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:716774 HCAPLUS

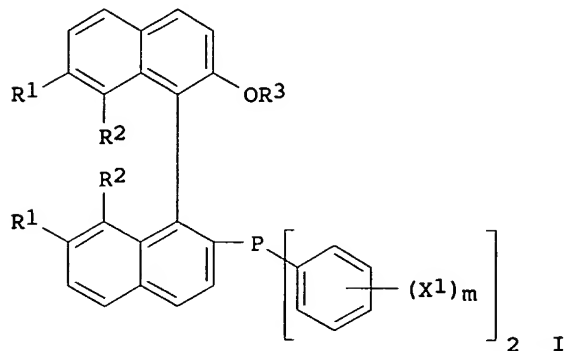
DOCUMENT NUMBER: 123:144274

TITLE: Preparation of tertiary phosphines and their
transition metal complexes as catalysts for
asymmetric synthesis reactions

INVENTOR(S): Hayashi, Tamio; Uozumi, Yasuhiro; Iwakura,
Kazunori; Kurimoto, Isao; Minai, Masayoshi

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Eur. Pat. Appl., 21 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 647647	A1	19950412	EP 1994-111780	19940728
EP 647647	B1	20011024	<--	
R: CH, DE, FR, GB, LI				
JP 07149776	A2	19950613	JP 1994-15341	19940209
JP 3590980	B2	20041117	<--	
JP 07224073	A2	19950822	JP 1994-16760	19940210
JP 3489176	B2	20040119	<--	
US 5523437	A	19960604	US 1994-280814	19940726
PRIORITY APPLN. INFO.:			JP 1993-251635	A 19931007
			JP 1994-15341	A 19940209
			JP 1994-16760	A 19940210
OTHER SOURCE(S):			CASREACT 123:144274; MARPAT 123:144274	
GI				



AB The prepn. of tertiary phosphine compd. I (R1, R2 = independently from each other a H, Me; R1R2 = CH:CHCH:CH; R3 =

H, C5-7 cycloalkyl, lower alkyl group which may be substituted with halogen, lower alkoxy, lower alkoxyalkoxy, Ph; X1 = halogen atom when both R1 and R2 are hydrogens, hydrogen atom, halogen atom, lower alkyl group, lower alkoxy group when at least one of R1 and R2 is not a hydrogen atoms; m = 1-5), useful as ligand of a transition metal complex that can catalyze various reactions, is described. Thus, redn. of (R)-(+)-3-diphenylphosphinyl-3'-methoxy-4,4'-biphenanthryl (prepn. given) with HSiCl_3 in the presence of Et₃N gave title compd., (R)-(+)-3-diphenylphosphino-3'-methoxy-4,4'-biphenanthryl (II), which was used in asym. synthesis of α -olefins. Thus, tris(dibenzylideneacetone)(chloroform)dipalladium(0)-catalyzed reaction of geranylmethyl carbonate with formic acid in the presence of 1,8-bis(dimethylamino)naphthalene and chiral cocatalyst II gave (S)-3,7-dimethyl-1,6-octadiene.

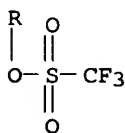
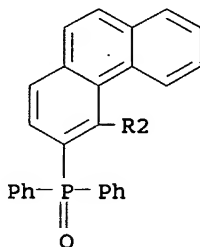
IT 157397-73-4P 165730-04-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (prepn. and hydrolysis of)

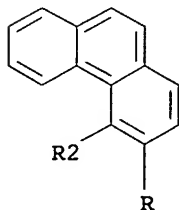
RN 157397-73-4 HCAPLUS

CN Methanesulfonic acid, trifluoro-, 3'-(diphenylphosphinyl)[4,4'-biphenanthren]-3-yl ester, (R)- (9CI) (CA INDEX NAME)

PAGE 1-A

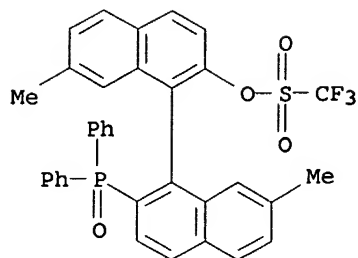


PAGE 2-A



RN 165730-04-1 HCAPLUS

CN Methanesulfonic acid, trifluoro-, 2'-(diphenylphosphinyl)-7,7'-dimethyl[1,1'-binaphthalen]-2-yl ester, (R)- (9CI) (CA INDEX NAME)

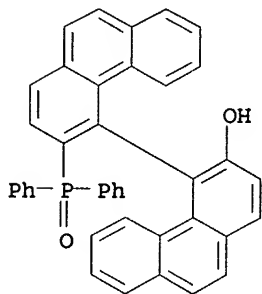


IT 157397-74-5P 165730-05-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (prepn. and methylation of)

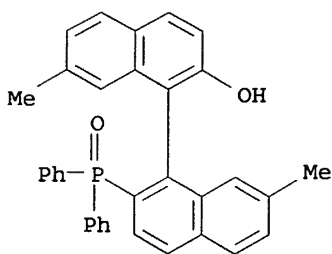
RN 157397-74-5 HCAPLUS

CN [4,4'-Biphenanthren]-3-ol, 3'-(diphenylphosphinyl)-, (R)- (9CI) (CA INDEX NAME)



RN 165730-05-2 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-(diphenylphosphinyl)-7,7'-dimethyl-, (R)- (9CI) (CA INDEX NAME)

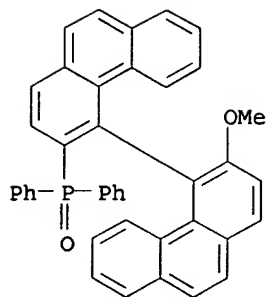


IT 157397-75-6P 165730-06-3P

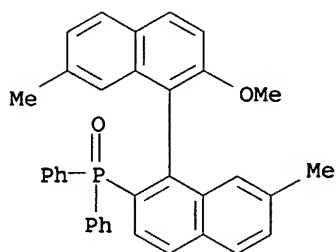
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (prepn. and redn. of)

RN 157397-75-6 HCAPLUS

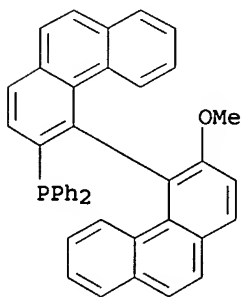
CN Phosphine oxide, (3'-methoxy[4,4'-biphenanthren]-3-yl)diphenyl-, (R)- (9CI) (CA INDEX NAME)



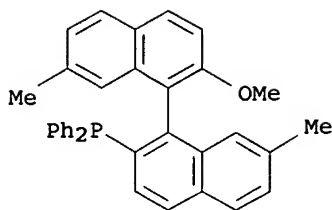
RN 165730-06-3 HCAPLUS
 CN Phosphine oxide, (2'-methoxy-7,7'-dimethyl[1,1'-binaphthalen]-2-yl)diphenyl-, (R)- (9CI) (CA INDEX NAME)



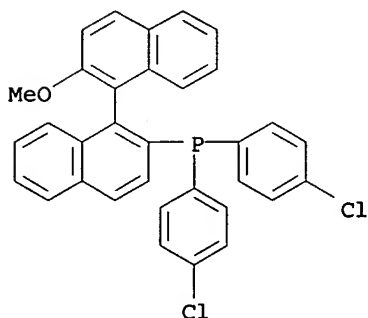
IT 155184-93-3P 165730-07-4P 165730-08-5P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of tertiary phosphines and their transition metal
 complexes as catalysts for asym. synthesis reactions)
 RN 155184-93-3 HCAPLUS
 CN Phosphine, [(4R)-3'-methoxy[4,4'-biphenanthren]-3-yl]diphenyl- (9CI)
 (CA INDEX NAME)



RN 165730-07-4 HCAPLUS
 CN Phosphine, (2'-methoxy-7,7'-dimethyl[1,1'-binaphthalen]-2-yl)diphenyl-, (R)- (9CI) (CA INDEX NAME)



RN 165730-08-5 HCAPLUS
 CN Phosphine, bis(4-chlorophenyl) (2'-methoxy[1,1'-binaphthalen]-2-yl)-,
 (R)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
 ICS B01J031-28; C07F015-00; C07F007-08; C07F007-14; C07F007-18;
 C07C001-22
 ICI C07M005-00, C07M007-00
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 21
 IT 157397-73-4P 165730-04-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. and hydrolysis of)
 IT 157397-74-5P 165730-05-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. and methylation of)
 IT 157397-75-6P 165730-06-3P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. and redn. of)
 IT 6737-42-4 12012-95-2 51364-51-3
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of tertiary phosphines and their transition metal
 complexes as catalysts for asym. synthesis reactions)
 IT 155184-93-3P 165730-07-4P 165730-08-5P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of tertiary phosphines and their transition metal
 complexes as catalysts for asym. synthesis reactions)

L26 ANSWER 60 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:231203 HCAPLUS

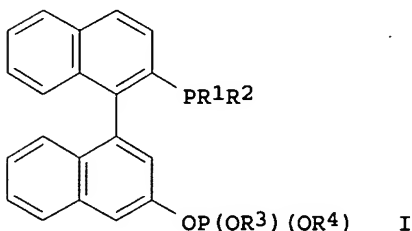
DOCUMENT NUMBER: 122:10257

TITLE: preparation of phosphine compounds and their
 transition metal complexes

INVENTOR(S): Takaya, Hidemasa; Sakai, Nozomu; Tamao, Kyoko
 Beru Mezon; Mano, Satoshi; Kumobayashi, Hidenor;

PATENT ASSIGNEE(S): Tomita, Tetsu
 Mitsubishi Gas Chemical Company, Inc., Japan;
 Takasago International Corporation
 SOURCE: Eur. Pat. Appl., 12 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 5
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 614901	A1	19940914	EP 1994-103674	19940310
EP 614901	B1	19980812		
R: CH, DE, FR, GB, IT, LI, NL				
JP 06263776	A2	19940920	JP 1993-52538	19930312
JP 3313805	B2	20020812		
PRIORITY APPLN. INFO.:			JP 1993-52538	19930312
OTHER SOURCE(S):				
GI				



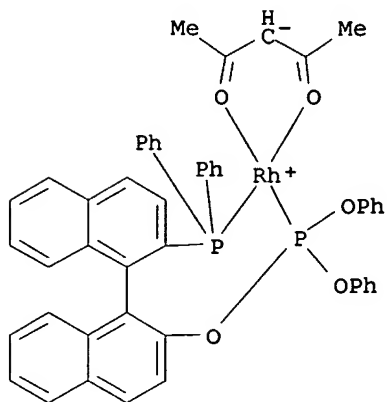
AB Disclosed herein is the prepn. of phosphine compd. I (R1, R2 = same or different halo or lower alkyl group substituted Ph, divalent hydrocarbon group; R3, R4 = same or different alkyl, halo or lower alkyl group substituted Ph, divalent hydrocarbon group), and their transition metal-phosphine complexes. When the transition metal-phosphine complex is used as a catalyst for asym. synthesis, an intended product having a desired abs. configuration can be obtained in a high optical purity at a high yield. Thus, reaction of (R)-2-diphenylphosphino-2'-hydroxy-1,1'-binaphthyl (prepn. given) with (S)-1,1'-binaphthalene-2,2'-diylldioxychlorophosphine (prepn. given) in the presence of Et3N in Et2O gave 98% title phosphine, (R)-2-diphenylphosphino-1,1'-binaphthalene-2'-yloxy((S)-1,1'-binaphthalene-2,2'-diylldioxy)phosphine, which was reacted with [Rh(CO)2(acac)] to give asym. hydroformylation catalyst for vinyl acetate or styrene.

IT 159398-08-0P 159398-09-1P 159398-10-4P
 159516-56-0P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of phosphine compds. and their transition metal

complexes)

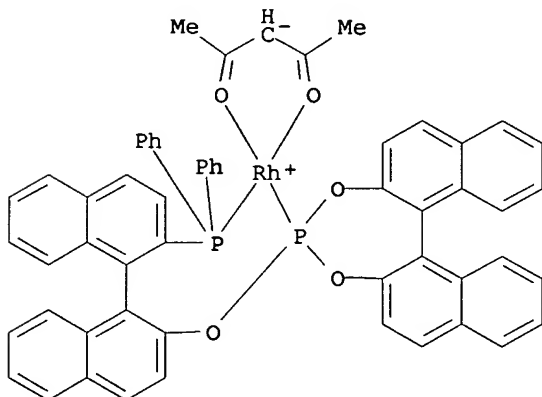
RN 159398-08-0 HCAPLUS

CN Rhodium, [2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl diphenyl phosphite-P,P'] (2,4-pentanedionato-O,O')-, [SP-4-3-(R)]- (9CI) (CA INDEX NAME)



RN 159398-09-1 HCAPLUS

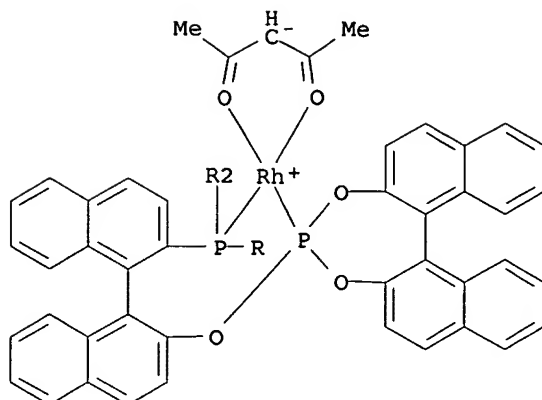
CN Rhodium, [4-[[2'-(diphenylphosphino-κP)[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-κP4] (2,4-pentanedionato-κO,κO')-, stereoisomer (9CI) (CA INDEX NAME)



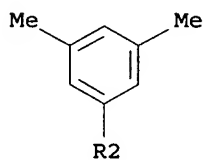
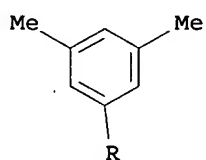
RN 159398-10-4 HCAPLUS

CN Rhodium, [4-[[2'-[bis(3,5-dimethylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-κP4] (2,4-pentanedionato-κO,κO')-, stereoisomer (9CI) (CA INDEX NAME)

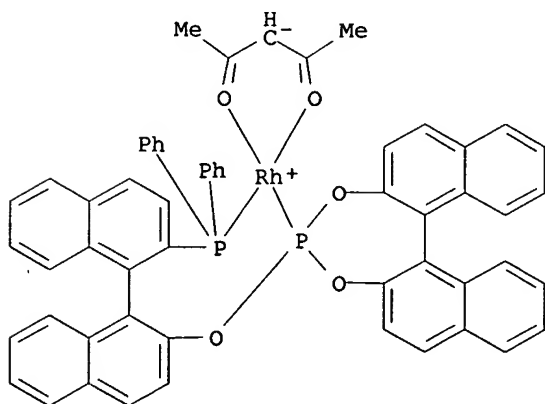
PAGE 1-A



PAGE 2-A



RN 159516-56-0 HCAPLUS
 CN Rhodium, [4-[[2'-(diphenylphosphino-κP) [1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f] [1,3,2]dioxaphosphepin-κP4] (2,4-pentanedionato-κO,κO')-, stereoisomer (9CI) (CA INDEX NAME)

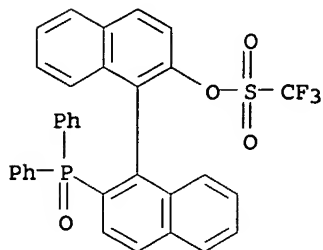


IT 132532-04-8P 149917-85-1P 149917-86-2P
149917-87-3P 149917-88-4P 149917-89-5P
149952-92-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(prepn. of phosphine compds. and their transition metal
complexes)

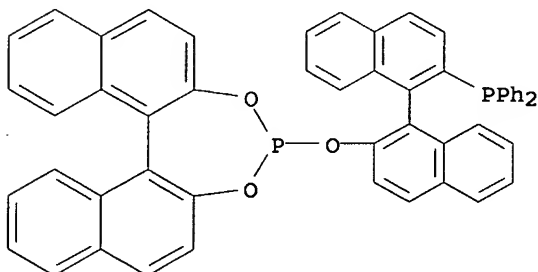
RN 132532-04-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphinyl)[1,1'-
binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



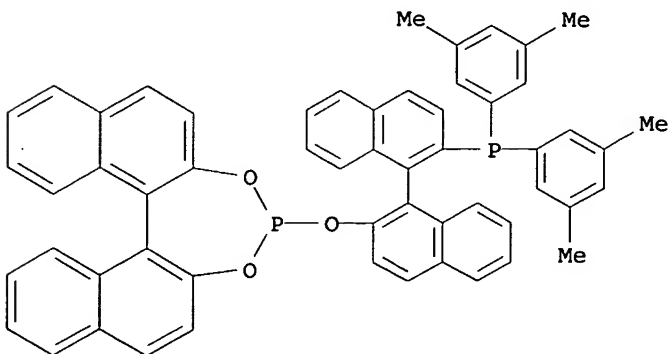
RN 149917-85-1 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[[(1R)-2'-
(diphenylphosphino)[1,1'-binaphthalen]-2-yl]oxy]-, (1bS)- (9CI)
(CA INDEX NAME)



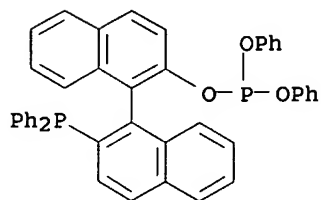
RN 149917-86-2 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-[bis(3,5-
dimethylphenyl)phosphino][1,1'-binaphthalen]-2-yl]oxy]-,
stereoisomer (9CI) (CA INDEX NAME)



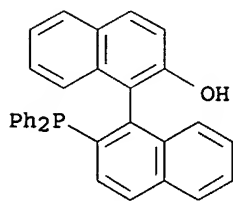
RN 149917-87-3 HCAPLUS

CN Phosphorous acid, (1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl diphenyl ester (9CI) (CA INDEX NAME)



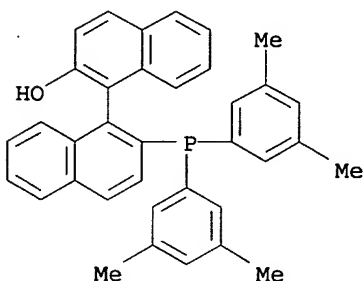
RN 149917-88-4 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-(diphenylphosphino)-, (1R)- (9CI) (CA INDEX NAME)



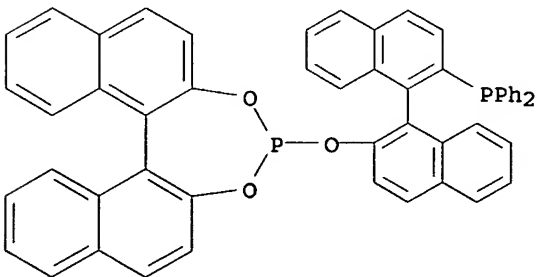
RN 149917-89-5 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-[bis(3,5-dimethylphenyl)phosphino]-, (R)- (9CI) (CA INDEX NAME)



RN 149952-92-1 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[1,1'-binaphthalen]-2-yl]oxy-, (1bR)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
 ICS C07F015-00; C07C045-50; C07F009-6574; C07F009-6568
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 67, 78
 ST diphosphine prepn transition
 metal ligand; rhodium diphosphine
 complex prepn hydroformylation catalyst
 IT 159398-08-0P 159398-09-1P 159398-10-4P
 159516-56-0P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of phosphine compds. and their transition metal
 complexes)
 IT 126613-06-7P 132532-04-8P 137156-22-0P
 149917-85-1P 149917-86-2P 149917-87-3P
 149917-88-4P 149917-89-5P 149952-92-1P
 155613-52-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. of phosphine compds. and their transition metal
 complexes)

L26 ANSWER 61 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:231202 HCAPLUS

DOCUMENT NUMBER: 122:31704

TITLE: Phosphine compounds and transition
 metal-phosphine complexes containing them as
 ligands.

INVENTOR(S): Matsumura, Kazuhiko; Saito, Takao; Sayo, Noboru;
 Kumobayashi, Hidemasa; Takaya, Hidemasa

PATENT ASSIGNEE(S): Takasago International Corporation, Japan

SOURCE: Eur. Pat. Appl., 9 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

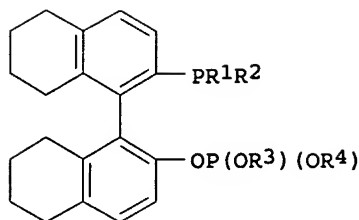
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 5

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 614902	A1	19940914	EP 1994-301774	199403 11
EP 614902	B1	19970611		
R: CH, DE, FR, GB, IT, LI, NL				
JP 06263777	A2	19940920	JP 1993-52540	199303 12
PRIORITY APPLN. INFO.:			JP 1993-52540	A 199303 12

OTHER SOURCE(S): CASREACT 122:31704; MARPAT 122:31704
 GI



I

AB Novel phosphine compds. I wherein R1 and R2, which may be the same or different, each represent a Ph group or a Ph group substituted with a halogen atom or a lower alkyl group or they are taken together to form a divalent hydrocarbon group; and R3 and R4, which may be the same or different, each represent a lower alkyl group, a Ph group or a Ph group substituted with a halogen atom, a lower alkyl group or a lower alkoxy group or they are taken together to form a divalent hydrocarbon group. were prepd.

Transition metal-phosphine complexes

contg. the phosphine compd. I as a ligand

catalyze asym. synthesis and provide a compd. having a desired abs. configuration in high yield and high asym. yield.

IT 159398-06-8P 159398-07-9P 159398-23-9P

159398-24-0P 159398-26-2P 159436-33-6P

159516-54-8P 159516-55-9P

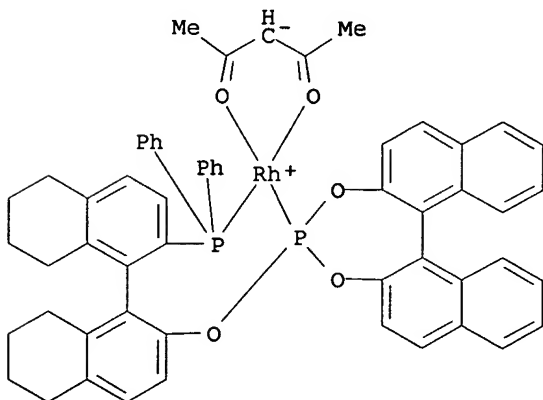
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of chiral phosphinobinaphthyl phosphites and their metal complexes for stereoselective hydroformylation of alkenes)

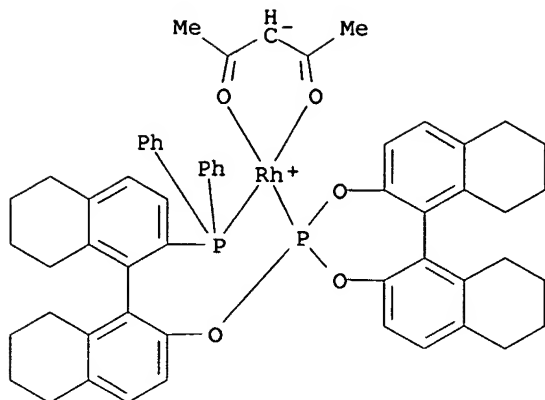
RN 159398-06-8 HCAPLUS

CN Rhodium, [4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4'] (2,4-pentanedionato-O,O')-, stereoisomer (9CI) (CA INDEX NAME)



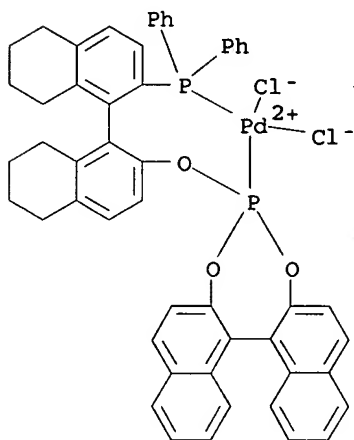
RN 159398-07-9 HCAPLUS

CN Rhodium, [4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4'] (2,4-pentanedionato-O,O')-, stereoisomer (9CI) (CA INDEX NAME)



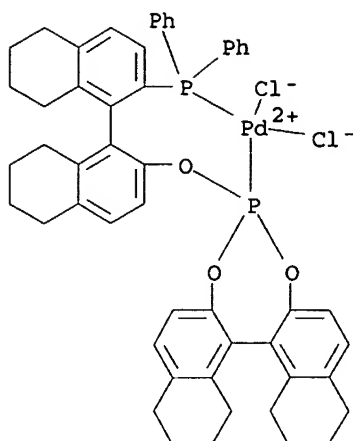
RN 159398-23-9 HCAPLUS

CN Palladium, dichloro[4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4']-, stereoisomer (9CI) (CA INDEX NAME)



RN 159398-24-0 HCAPLUS

CN Palladium, dichloro[4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4']-, stereoisomer (9CI) (CA INDEX NAME)

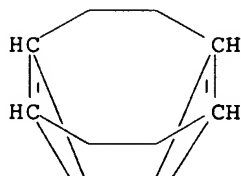


RN 159398-26-2 HCAPLUS
 CN Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene] [4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4']-, stereoisomer, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

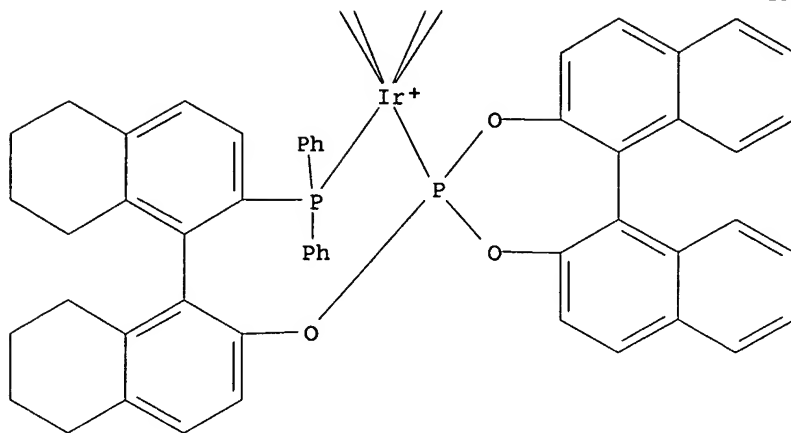
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CRN 159398-25-1
 CMF C60 H54 Ir O3 P2
 CCI CCS

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PAGE 2-A

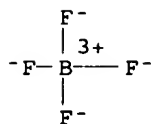


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



RN 159436-33-6 HCAPLUS

CN Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene] [4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f] [1,3,2]dioxaphosphepin-P4,P4']-, stereoisomer, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

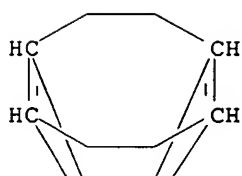
CM 1

CRN 159436-32-5

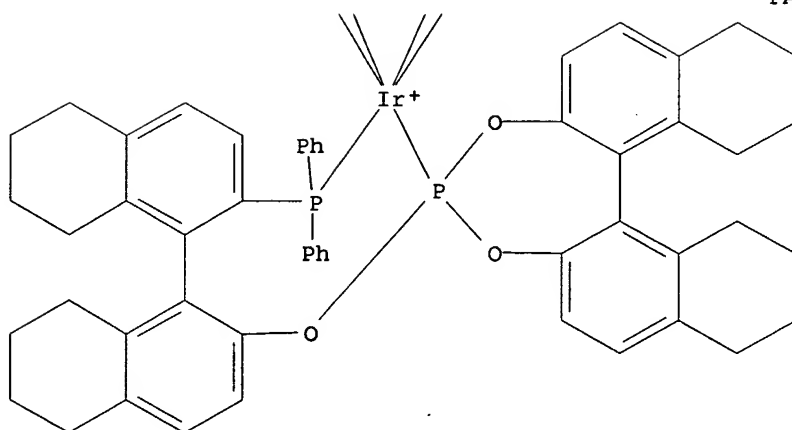
CMF C60 H62 Ir O3 P2

CCI CCS

PAGE 1-A



PAGE 2-A

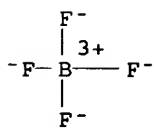


CM 2

CRN 14874-70-5

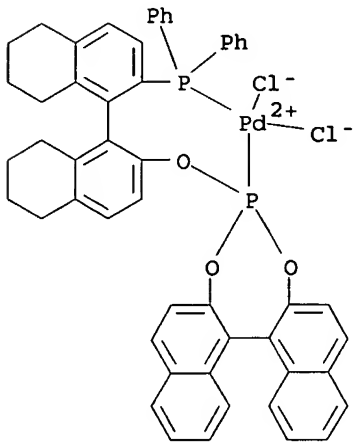
CMF B F4

CCI CCS



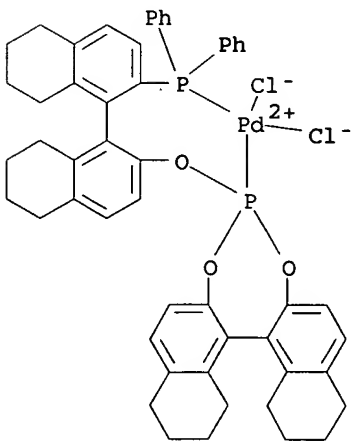
RN 159516-54-8 HCAPLUS

CN Palladium, dichloro[4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4']-, stereoisomer (9CI) (CA INDEX NAME)



RN 159516-55-9 HCAPLUS

CN Palladium, dichloro[4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,8,9,11,12,13,14,15-octahydrodinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4']-, stereoisomer (9CI) (CA INDEX NAME)



IT 159496-90-9P 159496-91-0P 159496-92-1P

159496-94-3P 159573-31-6P 159573-32-7P

159573-33-8P 159573-34-9P

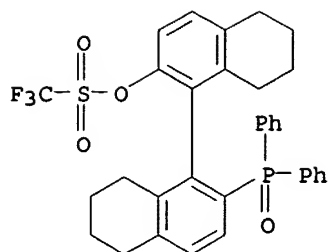
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(prepn. of chiral phosphinobinaphthyl phosphites and their metal complexes for stereoselective hydroformylation of alkenes)

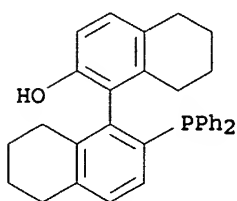
RN 159496-90-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphinyl)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



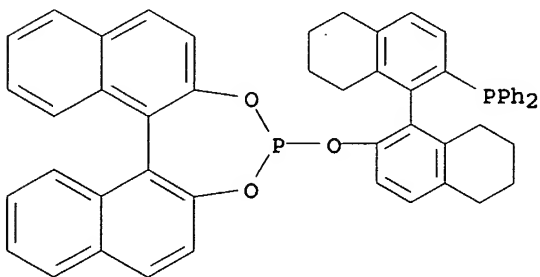
RN 159496-91-0 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro-, (R)- (9CI) (CA INDEX NAME)



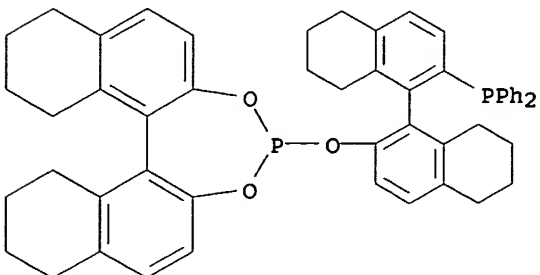
RN 159496-92-1 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)

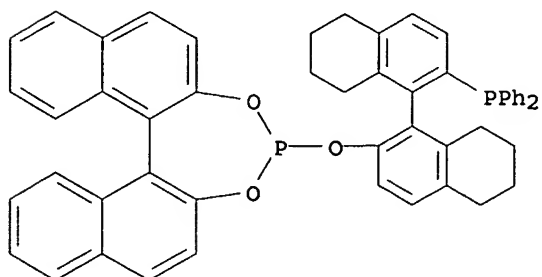


RN 159496-94-3 HCAPLUS

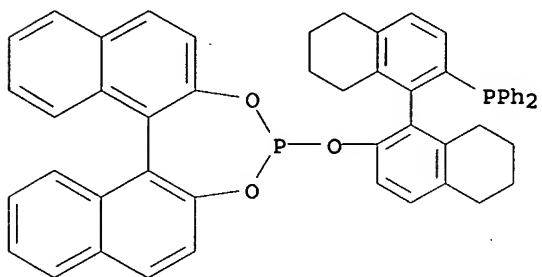
CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydro-, stereoisomer (9CI) (CA INDEX NAME)



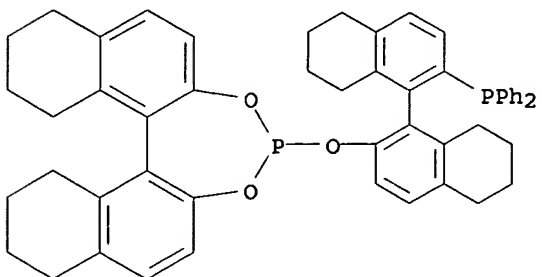
RN 159573-31-6 HCAPLUS
 CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)



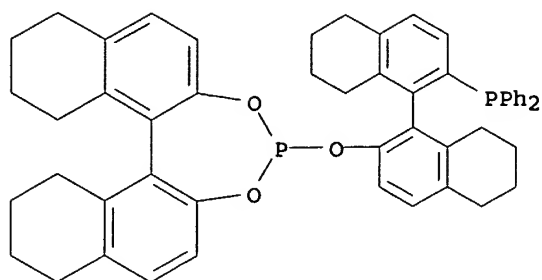
RN 159573-32-7 HCAPLUS
 CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)



RN 159573-33-8 HCAPLUS
 CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydro-, stereoisomer (9CI) (CA INDEX NAME)



RN 159573-34-9 HCAPLUS
 CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydro-, stereoisomer (9CI) (CA INDEX NAME)



IC ICM C07F009-50
ICS C07F015-00
CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 78
IT 159398-06-8P 159398-07-9P 159398-23-9P
159398-24-0P 159398-26-2P 159436-33-6P
159516-54-8P 159516-55-9P
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of chiral phosphinobinaphthyl phosphites and their metal
complexes for stereoselective hydroformylation of alkenes)
IT 65355-14-8P 137156-22-0P 159496-89-6P 159496-90-9P
159496-91-0P 159496-92-1P 159496-93-2P
159496-94-3P 159573-31-6P 159573-32-7P
159573-33-8P 159573-34-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(prepn. of chiral phosphinobinaphthyl phosphites and their metal
complexes for stereoselective hydroformylation of alkenes)

L26 ANSWER 62 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:231201 HCAPLUS
DOCUMENT NUMBER: 122:239952
TITLE: Preparation of diphosphines and rhodium
complexes and their use for producing optically
active aldehydes and 4-[(R)-1'-
formylethyl]azetidin-2-one derivatives.
INVENTOR(S): Saito, Takao; Matsumura, Kazuhiko; Kato,
Yasushi; Sayo, Noboru; Kumobayashi, Hidenori
PATENT ASSIGNEE(S): Takasago International Corporation, Japan
SOURCE: Eur. Pat. Appl., 31 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 614903	A2	19940914	EP 1994-301775	199403 11
EP 614903	A3	19950111		
EP 614903	B1	20000920		
R: CH, DE, FR, GB, IT, LI, NL				
JP 06316560	A2	19941115	JP 1994-54426	199403 01
JP 3277065	B2	20020422		
JP 2002128759	A2	20020509	JP 2001-328632	

199403
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EP 684249 A1 19951129 EP 1995-111575

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EP 684249 B1 20030219
R: CH, DE, FR, GB, IT, LI, NL

EP 684230 A1 19951129 EP 1995-111576

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11

EP 684230 B1 20020703
R: CH, DE, FR, GB, IT, LI, NL

PRIORITY APPLN. INFO.: JP 1993-77484 A

199303
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JP 1994-54426 A3

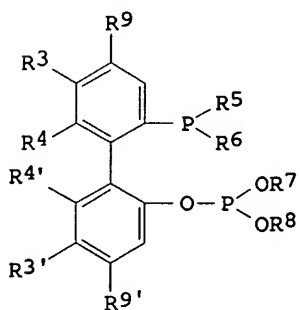
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EP 1994-301775 A3

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OTHER SOURCE(S): CASREACT 122:239952; MARPAT 122:239952

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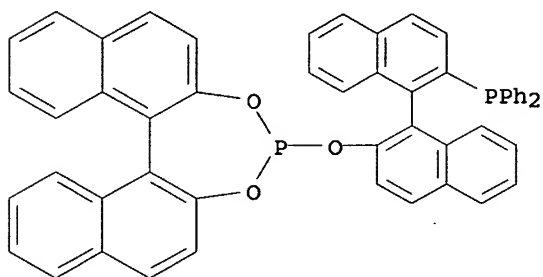
AB The **prepn.** of novel **phosphine** compds., e.g. I
(R4, R4' = H, lower alkyl, alkoxy; R3, R3', R9, R9' = H, lower alkyl, alkoxy, halo; R3R4, R3'R4' = ring; R5, R6 = (un)substituted Ph, halo, lower alkoxy; R7, R8 = (un)substituted Ph; R7R8 = divalent hydrocarbon), useful in the form of their **transition metal** complexes, of or compds. with **transition metals**, in producing an optically active aldehyde by hydroformylation of an olefin with high positional and steric selectivities, are described. 4-[(R)-1'-formylethyl]azetidin-2-one derivs. obtainable by the process is particularly useful as an intermediate for the **prepn.** of carbapenem antibiotics. Thus, reaction of (±)-3,3'-dichloro-2,2',4,4'-tetramethyl-6-diphenylphosphino-6'-hydroxybiphenyl (**prepn.** given) with (R)-1,1'-binaphthalene-2,2'-diyldioxychlorophosphine (**prepn.** given) in PhMe in the presence of Et3N gave (S)-3,3'-dichloro-2,2',4,4'-tetramethyl-6-diphenylphosphinobiphenyl-6'-yloxy((R)-1,1'-binaphthalene-2,2'-diyldioxy)**phosphine** (II). Hydroformylation of styrene in the presence of Rh(acac)(CO)2 (catalyst) and **ligand** II gave good yield of (S)-(+)-2-phenylpropanal with 94% enantiomeric excess.

IT 149917-85-1P 149917-86-2P 149917-87-3P
 149952-92-1P 155566-52-2P 155566-53-3P
 155613-50-6P 155613-51-7P 159496-88-5P
 159496-92-1P 159496-94-3P 159496-96-5P
 159573-28-1P 159573-29-2P 159573-30-5P
 159573-31-6P 159573-32-7P 159573-33-8P
 159573-34-9P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)

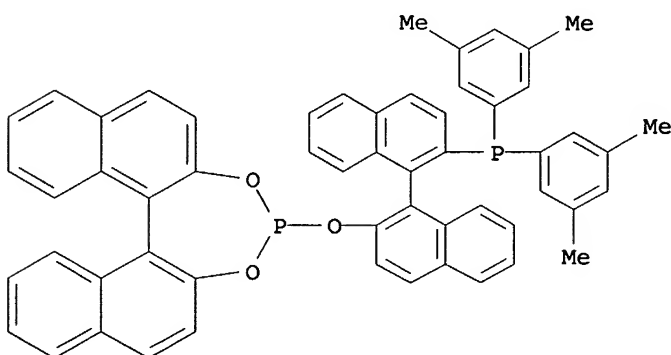
RN 149917-85-1 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[[(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]oxy]-, (11bS)- (9CI)
 (CA INDEX NAME)



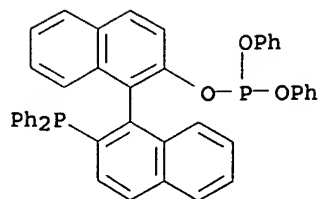
RN 149917-86-2 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[[2'-[bis(3,5-dimethylphenyl)phosphino][1,1'-binaphthalen]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)

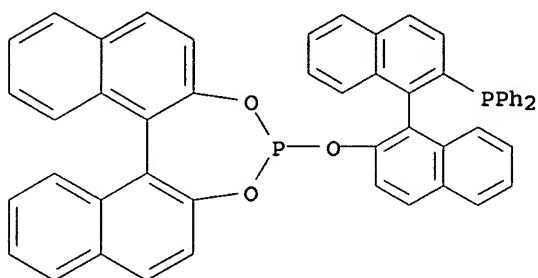


RN 149917-87-3 HCAPLUS

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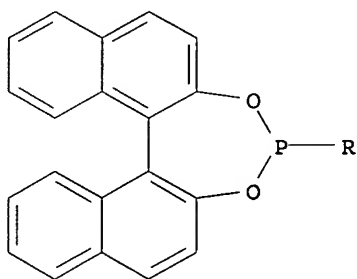


RN 149952-92-1 HCAPLUS
 CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[{(1R)-2'-(diphenylphosphino)-1,1'-binaphthalen]-2-yl]oxy]-, (11bR)-(9CI)
 (CA INDEX NAME)

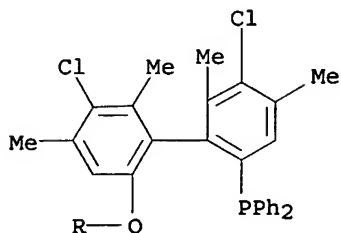


RN 155566-52-2 HCAPLUS
 CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[3',5-dichloro-6'-(diphenylphosphino)-2',4,4',6-tetramethyl[1,1'-biphenyl]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)

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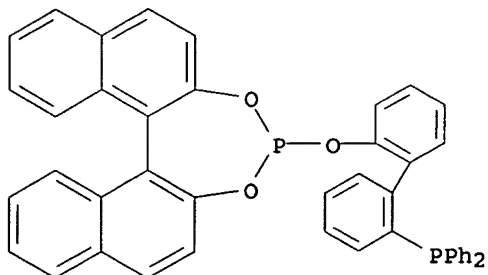


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RN 155566-53-3 HCAPLUS

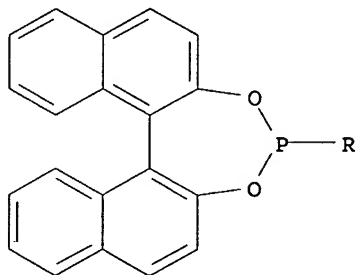
CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)[1,1'-biphenyl]-2-yl]oxy]-, stereoisomer (9CI)
(CA INDEX NAME)



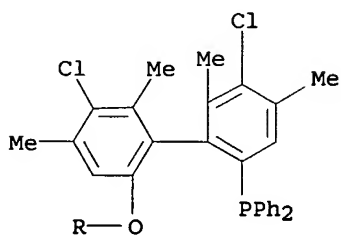
RN 155613-50-6 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[3',5-dichloro-6'-(diphenylphosphino)-2',4,4',6-tetramethyl[1,1'-biphenyl]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)

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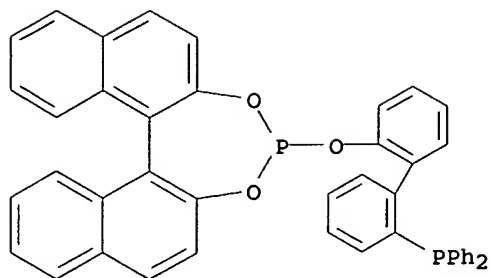


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RN 155613-51-7 HCAPLUS

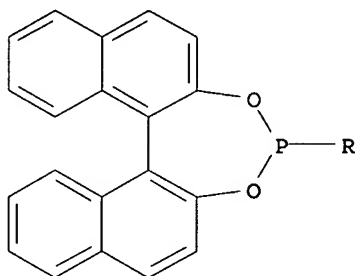
CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)[1,1'-biphenyl]-2-yl]oxy]-, stereoisomer (9CI)
(CA INDEX NAME)



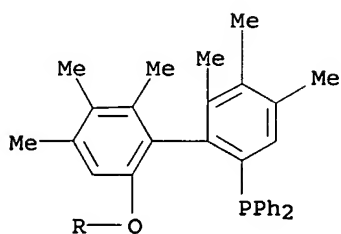
RN 159496-88-5 HCAPLUS

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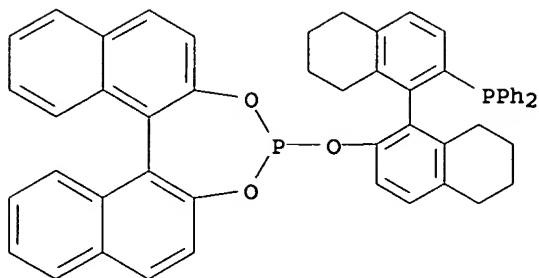


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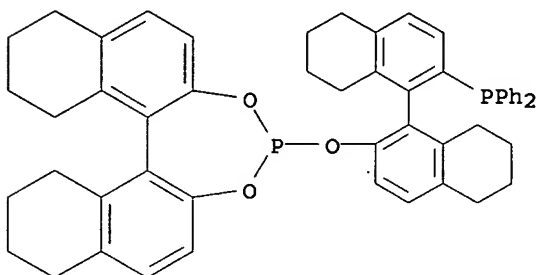
RN 159496-92-1 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[(2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)



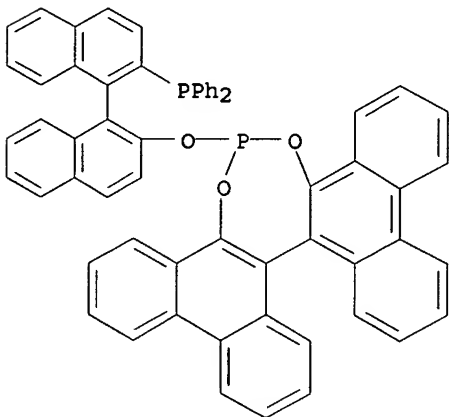
RN 159496-94-3 HCAPLUS

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RN 159496-96-5 HCAPLUS

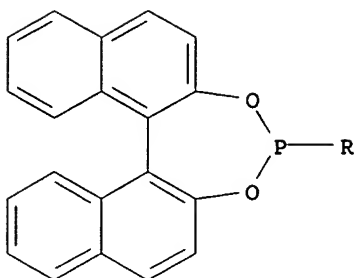
CN Diphenanthro[9,10-d:9',10'-f][1,3,2]dioxaphosphhepin, 18-[[2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)



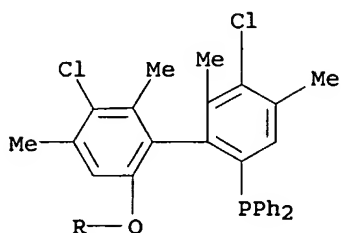
RN 159573-28-1 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphhepin, 4-[[3',5-dichloro-6'-(diphenylphosphino)-2',4,4',6-tetramethyl[1,1'-biphenyl]-2-yl]oxy]-, stereoisomer (9CI) (CA INDEX NAME)

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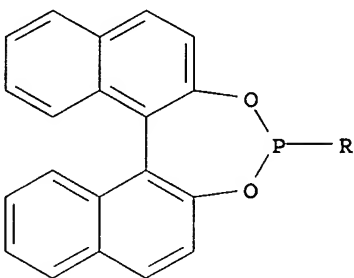


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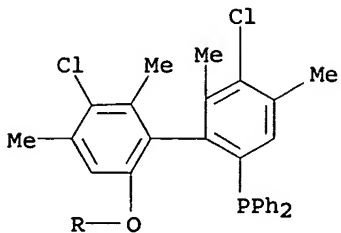


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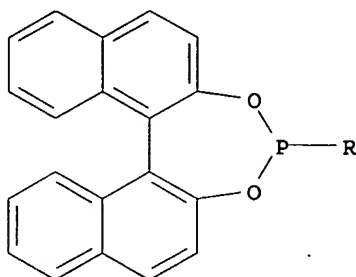
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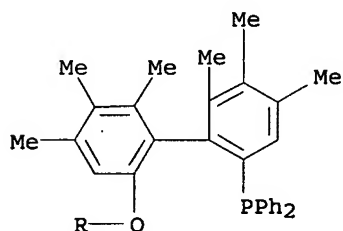
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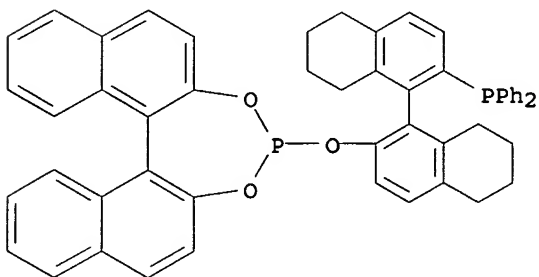


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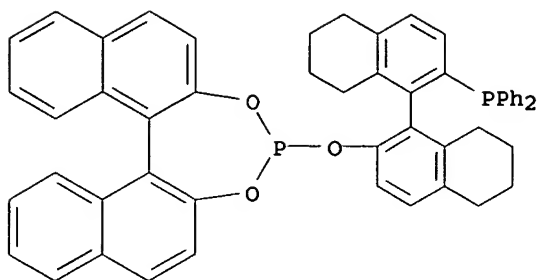
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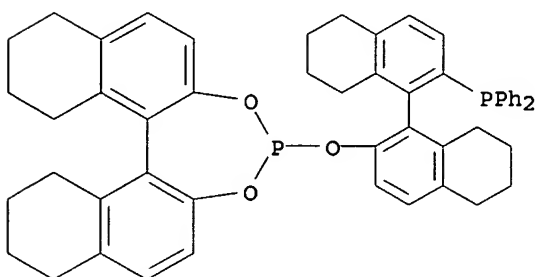
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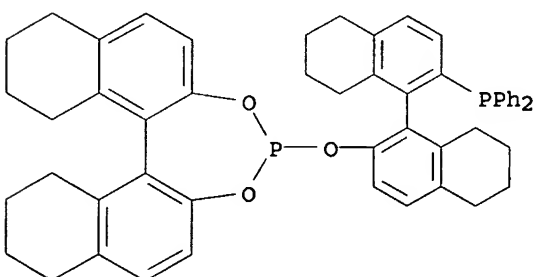
RN 159573-33-8 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydro-, stereoisomer (9CI) (CA INDEX NAME)



RN 159573-34-9 HCAPLUS

CN Dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin, 4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydro-, stereoisomer (9CI) (CA INDEX NAME)



IT 159398-04-6P 159398-05-7P 159398-06-8P
159398-07-9P 159398-08-0P 159398-09-1P
159398-10-4P 159516-49-1P 159516-56-0P
159518-56-6P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)

RN 159398-04-6 HCAPLUS

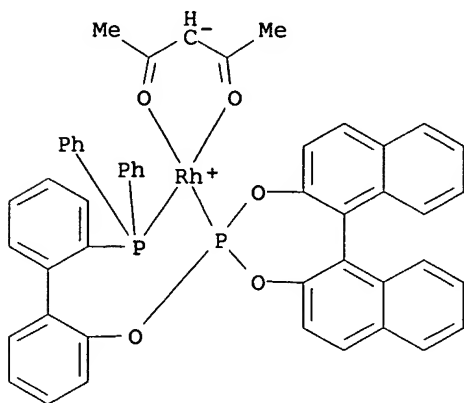
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f] [1,3,2]dioxaphosphepin- κ P4] (2,4-pentanedionato- κ O, κ O')-, stereoisomer (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

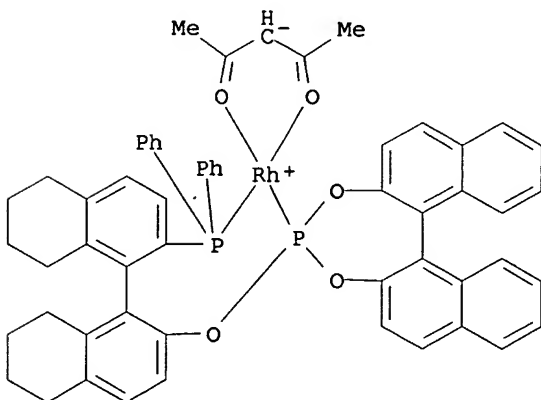
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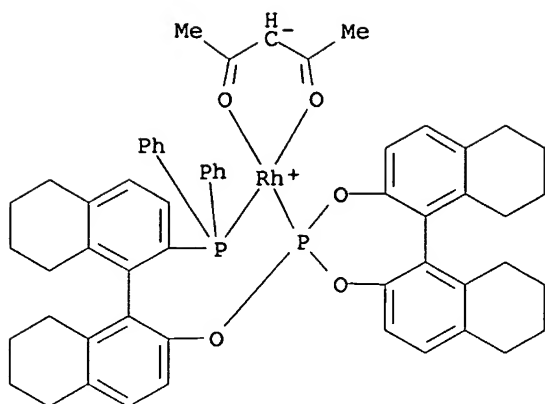
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CN Rhodium, [4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f] [1,3,2]dioxaphosphepin-P4,P4'] (2,4-pentanedionato-O,O')-, stereoisomer (9CI) (CA INDEX NAME)



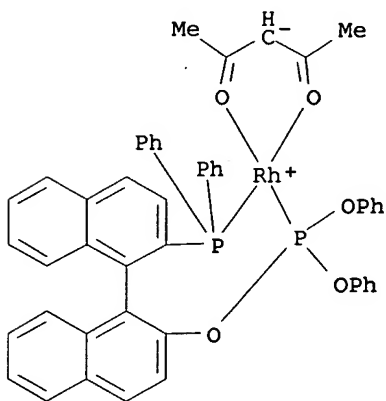
RN 159398-07-9 HCAPLUS

CN Rhodium, [4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]-8,9,10,11,12,13,14,15-octahydrodinaphtho[2,1-d:1',2'-f] [1,3,2]dioxaphosphepin-P4,P4'] (2,4-pentanedionato-O,O')-, stereoisomer (9CI) (CA INDEX NAME)



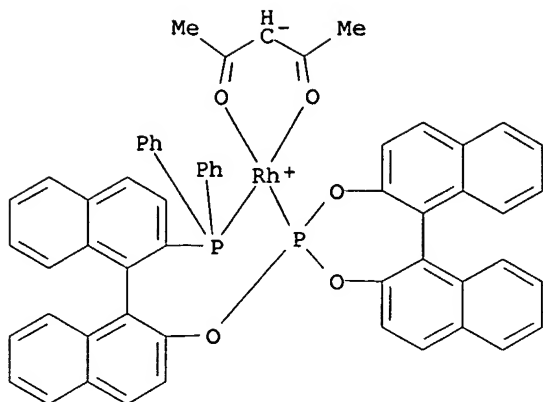
RN 159398-08-0 HCAPLUS

CN Rhodium, [2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl diphenyl phosphite-P,P'] (2,4-pentanedionato-O,O')-, [SP-4-3-(R)]- (9CI) (CA INDEX NAME)



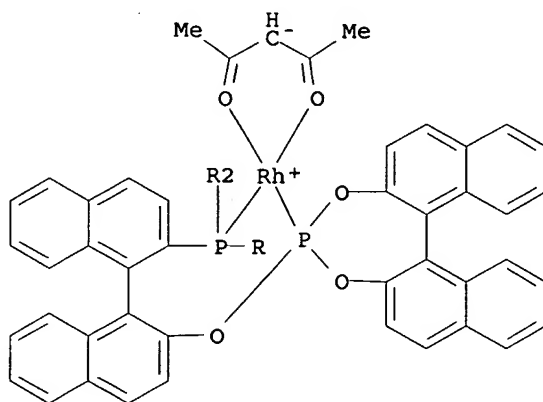
RN 159398-09-1 HCAPLUS

CN Rhodium, [4-[[2'-(diphenylphosphino-κP)[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-κP4] (2,4-pentanedionato-κO,κO')-, stereoisomer (9CI) (CA INDEX NAME)

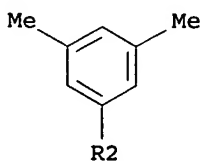
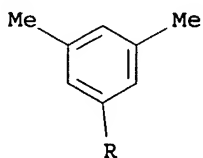


RN 159398-10-4 HCAPLUS
 CN Rhodium, [4-[[2'-[bis(3,5-dimethylphenyl)phosphino-κP] [1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f] [1,3,2]dioxaphosphepin-κP4] (2,4-pentanedionato-κO,κO')-, stereoisomer (9CI) (CA INDEX NAME)

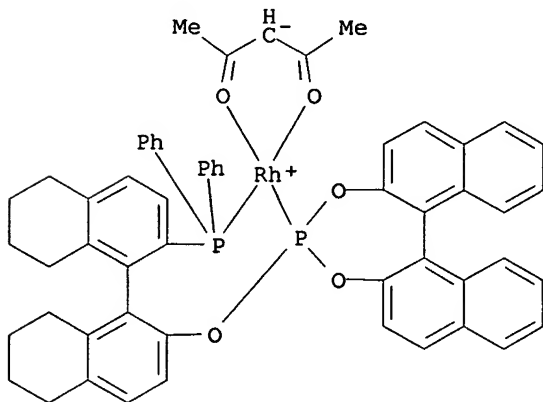
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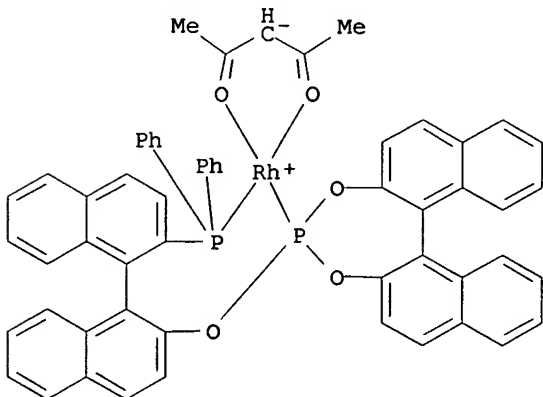
PAGE 2-A



RN 159516-49-1 HCAPLUS
 CN Rhodium, [4-[[2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-P4,P4'] (2,4-pentanedionato-O,O')-, stereoisomer (9CI) (CA INDEX NAME)



RN 159516-56-0 HCAPLUS
 CN Rhodium, [4-[[2'-(diphenylphosphino-κP)[1,1'-binaphthalen]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-κP4] (2,4-pentanedionato-κO,κO')-, stereoisomer (9CI) (CA INDEX NAME)



RN 159518-56-6 HCAPLUS
 CN Rhodium, [4-[[3',5-dichloro-6'-(diphenylphosphino-κP)-2',4,4',6-tetramethyl[1,1'-biphenyl]-2-yl]oxy]dinaphtho[2,1-d:1',2'-f][1,3,2]dioxaphosphepin-κP4] (2,4-pentanedionato-κO,κO')-, stereoisomer (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

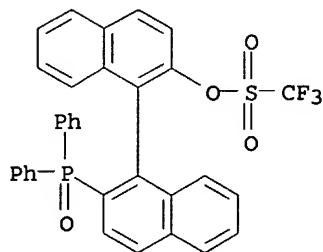
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 155566-49-7P 155566-50-0P 155566-51-1P
 159496-90-9P 159496-91-0P 179893-89-1P
 179893-90-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)

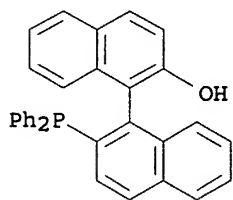
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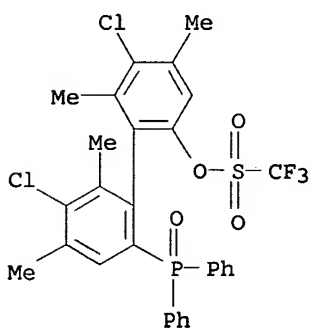
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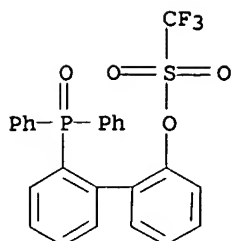
RN 155566-48-6 HCAPLUS

CN Methanesulfonic acid, trifluoro-, 3',5-dichloro-6'-(diphenylphosphinyl)-2',4,4',6-tetramethyl[1,1'-biphenyl]-2-yl ester (9CI) (CA INDEX NAME)



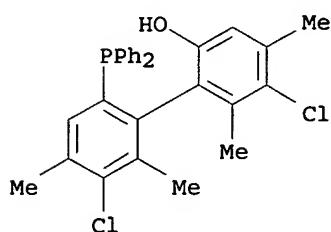
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CN Methanesulfonic acid, trifluoro-, 2'-(diphenylphosphinyl)[1,1'-biphenyl]-2-yl ester (9CI) (CA INDEX NAME)



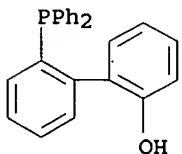
RN 155566-50-0 HCAPLUS

CN [1,1'-Biphenyl]-2-ol, 3',5-dichloro-6'-(diphenylphosphino)-2',4,4',6-tetramethyl- (9CI) (CA INDEX NAME)



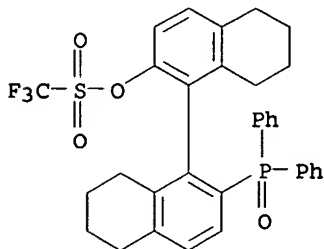
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CN [1,1'-Biphenyl]-2-ol, 2'-(diphenylphosphino)- (9CI) (CA INDEX NAME)



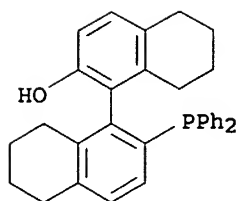
RN 159496-90-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphinyl)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)

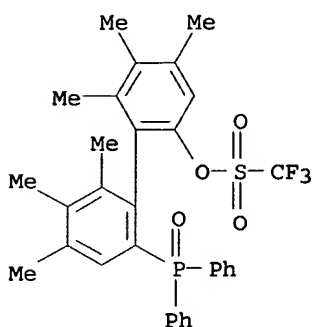


RN 159496-91-0 HCAPLUS

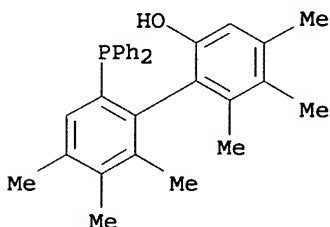
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RN 179893-89-1 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, 6'-(diphenylphosphinyl)-2',3',4,4',5,6-hexamethyl[1,1'-biphenyl]-2-yl ester (9CI) (CA INDEX NAME)



RN 179893-90-4 HCAPLUS
 CN [1,1'-Biphenyl]-2-ol, 6'-(diphenylphosphino)-2',3',4,4',5,6-hexamethyl- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
 ICS C07F015-00; C07C045-50; C07F009-6574; C07F009-6568; C07D205-08
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 26, 67, 78
 IT 3375-31-3, Palladium acetate 12092-47-6 149952-93-2
 159398-11-5 159496-99-8
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)
 IT 31096-69-2
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)
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 149952-92-1P 155566-52-2P 155566-53-3P

155613-50-6P 155613-51-7P 159496-88-5P
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159573-31-6P 159573-32-7P 159573-33-8P
159573-34-9P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)

IT 159398-04-6P 159398-05-7P 159398-06-8P
159398-07-9P 159398-08-0P 159398-09-1P
159398-10-4P 159516-49-1P 159516-56-0P
159518-56-6P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)

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155613-52-8P 159496-89-6P 159496-90-9P
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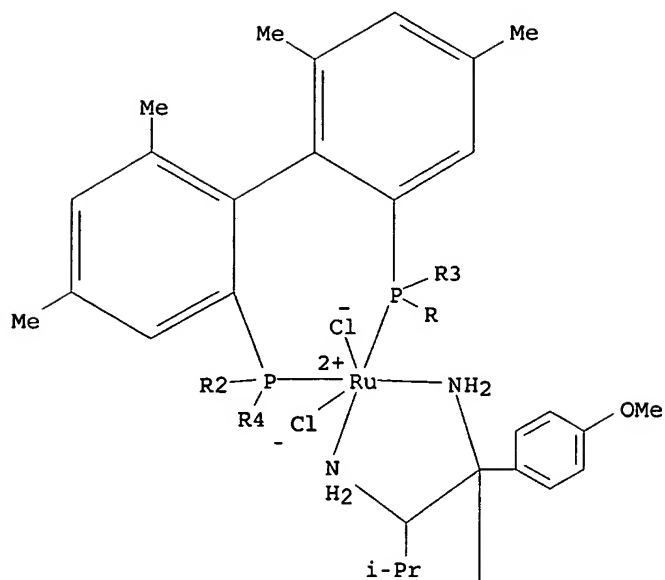
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

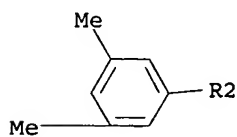
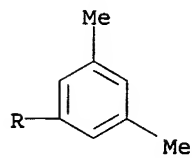
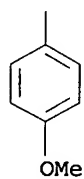
(prepn. of diphosphines and rhodium complexes and their use for producing optically active aldehydes and formylethylazetidinone derivs.)

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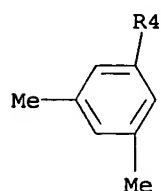
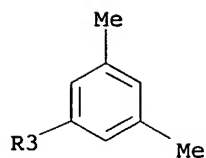
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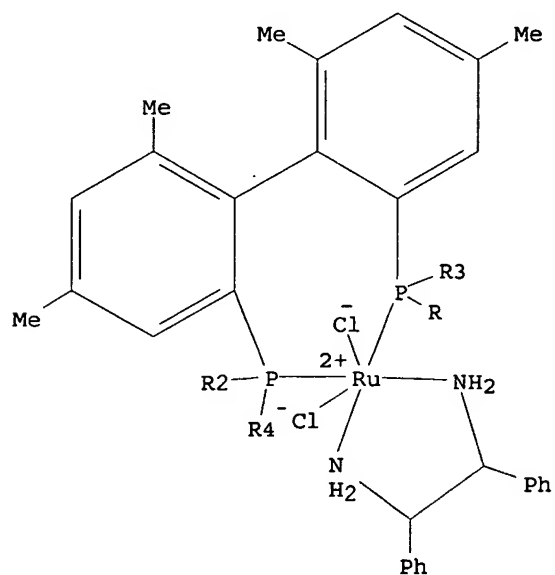


PAGE 3-A

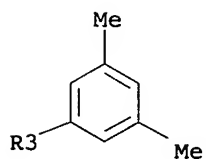
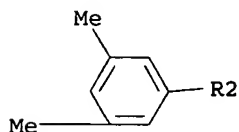
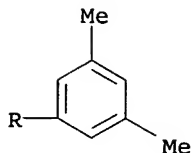


RN 600135-73-7 HCAPLUS
 CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'] [[(1S)-4,4',6,6'-tetramethyl[1,1'-biphenyl]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)phosphine- κ P]]-, (OC-6-13)-(9CI) (CA INDEX NAME)

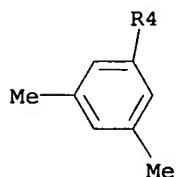
PAGE 1-A



PAGE 2-A



PAGE 3-A



CC 25-7 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

IT 540744-45-4P 540744-46-5P 600127-09-1P

600135-73-7P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of a xylyl biaryl diphosphine

ligand for asym. hydrogenation of ketones)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L26 ANSWER 25 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:295444 HCAPLUS

DOCUMENT NUMBER: 139:36590

TITLE: SYNPHOS: a New Atropisomeric Diphosphine Ligand.
From Laboratory-scale Synthesis to Scale-up
Development

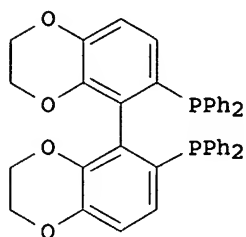
AUTHOR(S): Duprat de Paule, Sebastien; Jeulin, Severine;
Ratovelomanana-Vidal, Virginie; Genet,
Jean-Pierre; Champion, Nicolas; Deschaux,
Gilles; Dellis, Philippe

CORPORATE SOURCE: Laboratoire de Synthese Selective Organique et
Produits Naturels, ENSCP, Paris, 75231, Fr.

SOURCE: Organic Process Research & Development (

2003), 7(3), 399-406
CODEN: OPRDFK; ISSN: 1083-6160

PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 139:36590
 GI

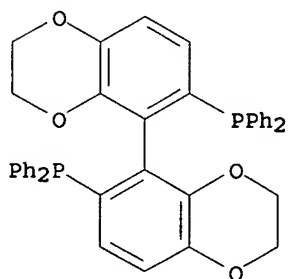


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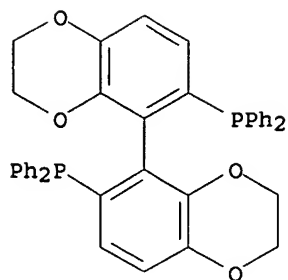
AB A new optically active diphosphine ligand, [(5,6),(5',6')-bis(ethylenedioxy)biphenyl-2,2'-diyl]bis(diphenylphosphine) (SYNPHOS) I has been synthesized. Lab.-scale synthesis and scale-up development of this ligand are described herein. This new atropisomeric diphosphine was also used in ruthenium-catalyzed asym. hydrogenation.

IT 445467-61-8P, (+)-(R)-SYNPHOS 503538-68-9P, (-)-(S)-SYNPHOS
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (scale-up synthesis of SYNPHOS as new atropisomeric diphosphine ligand for ruthenium catalyzed asym. hydrogenation of ketones)

RN 445467-61-8 HCAPLUS
 CN Phosphine, [(5R)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



RN 503538-68-9 HCAPLUS
 CN Phosphine, [(5S)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 21

IT 445467-61-8P, (+)-(R)-SYNPHOS 503538-68-9P, (-)-(S)-SYNPHOS

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(scale-up synthesis of SYNPHOS as new atropisomeric diphosphine ligand for ruthenium catalyzed asym. hydrogenation of ketones)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 26 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:262780 HCAPLUS

DOCUMENT NUMBER: 138:280367

TITLE: Preparation of bis(alkylenedioxy)biphenyldiylidiposphines, their complexes with transition metals, and their use as asymmetric synthesis catalysts

INVENTOR(S): Duprat De Paule, Sebastien; Champion, Nicolas; Vidal, Virginie; Genet, Jean Pierre; Dellis, Philippe

PATENT ASSIGNEE(S): Synkem, Fr.

SOURCE: Fr. Demande, 29 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2830254	A1	20030404	FR 2001-12499	20010928
FR 2830254	B1	20040917		
CA 2462045	AA	20030410	CA 2002-2462045	20020916
WO 2003029259	A1	20030410	WO 2002-FR3146	20020916

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,

LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
 NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,
 TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
 BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
 EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR,
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 TG

EP 1436304 A1 20040714 EP 2002-800152 200209
 16

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 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
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 BR 2002012763 A 20041013 BR 2002-12763

200209
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CN 1558908 A 20041229 CN 2002-818813 200209
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JP 2005504129 T2 20050210 JP 2003-532507 200209
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AT 290540 E 20050315 AT 2002-800152 200209
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PT 1436304 T 20050729 PT 2002-800152 200209
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ES 2238635 T3 20050901 ES 2002-2800152 200209
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US 2004260101 A1 20041223 US 2004-490409 200403
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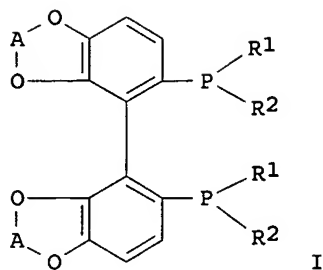
PRIORITY APPLN. INFO.: FR 2001-12499 A 200109
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WO 2002-FR3146 W 200209
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OTHER SOURCE(S): CASREACT 138:280367; MARPAT 138:280367
 GI



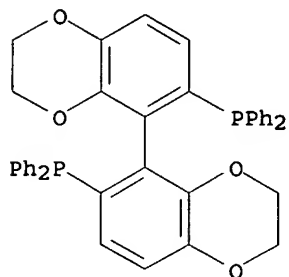
AB The invention relates to new optically pure or racemic bis(alkylenedioxy)biphenyldiyl diphosphines I [R1 and R2 are (C5-C7)cycloalkyl, various (un)substituted Ph, or a 5-membered heteroaryl; A is CH₂CH₂ or CF₂], and intermediates in their **prepn.** The invention also relates to I as **ligands** for **transition metal** complexes, which are useful as chiral catalysts in asym. catalysis, esp. asym. hydrogenation and carbon-carbon coupling. Thus, **prepd. ligand** (S)-I (R1 = R2 = Ph, A = CH₂CH₂) and (1,5-cyclooctadiene)bis(methylallyl)ruthenium in acetone were reacted with HBr in MeOH to generate a chiral catalyst in situ. Hydrogenation of MeCOCH₂CO₂Me (4 bar at 50° in MeOH, 24 h) in the presence of the catalyst afforded (S)-MeCH(OH)CH₂CO₂Me in >99% e.e.

IT 445467-61-8P 503538-68-9P 503538-69-0P
503538-70-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and complexation with transition metals to give asym. synthesis catalysts)

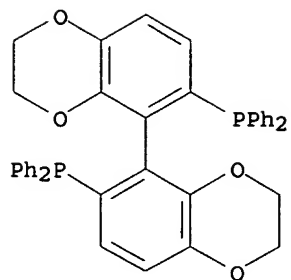
RN 445467-61-8 HCAPLUS

CN Phosphine, [(5R)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



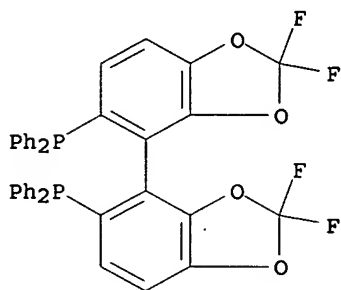
RN 503538-68-9 HCAPLUS

CN Phosphine, [(5S)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



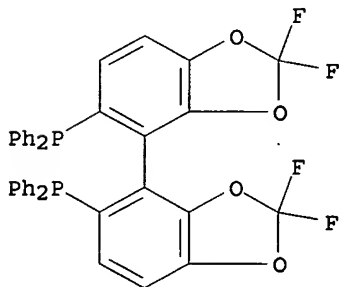
RN 503538-69-0 HCAPLUS

CN Phosphine, [(4R)-2,2,2',2'-tetrafluoro[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



RN 503538-70-3 HCAPLUS

CN Phosphine, [(4S)-2,2,2',2'-tetrafluoro[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



IT 445467-62-9P

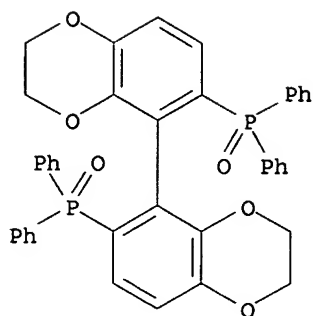
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

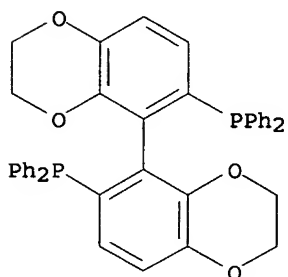
(prepn. and redn. to give bis(alkylenedioxy)biphenyldiyl diphosphine ligand)

RN 445467-62-9 HCAPLUS

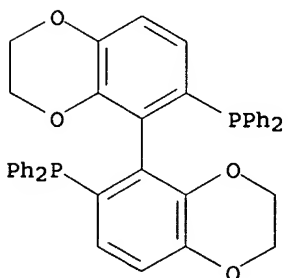
CN Phosphine oxide, [(5R)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



IT 445467-61-8DP, in situ reaction product with ruthenium complex 503538-68-9DP, in situ reaction product with ruthenium complex
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. as catalyst for asym. hydrogenation)
 RN 445467-61-8 HCAPLUS
 CN Phosphine, [(5R)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



RN 503538-68-9 HCAPLUS
 CN Phosphine, [(5S)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



IT 503269-77-0P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. as catalyst for asym. hydrogenation of ketones)
 RN 503269-77-0 HCAPLUS
 CN Ruthenate(1-), tri-μ-chlorodichlorobis[[(5S)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenylphosphine-κP]]di-, hydrogen, compd. with N-ethylethanamine (1:1) (9CI) (CA INDEX NAME)

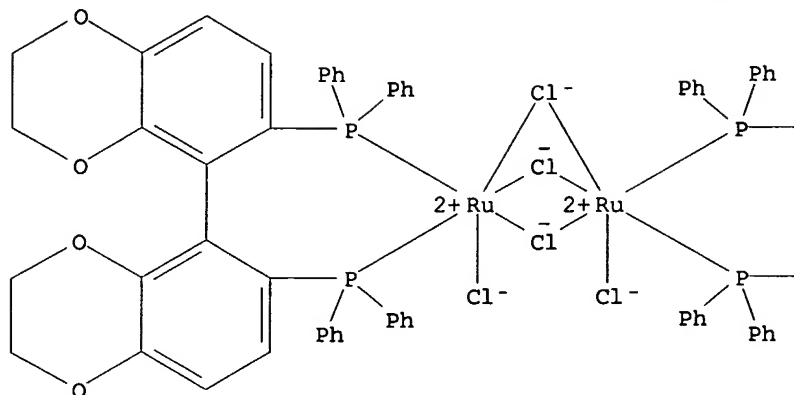
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CRN 503269-76-9

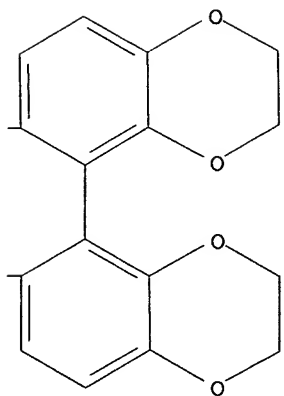
CMF C80 H64 Cl5 O8 P4 Ru2 . H

CCI CCS

PAGE 1-A

● H⁺

PAGE 1-B



CM 2

CRN 109-89-7

CMF C4 H11 N



IT 503269-79-2P 503269-81-6P

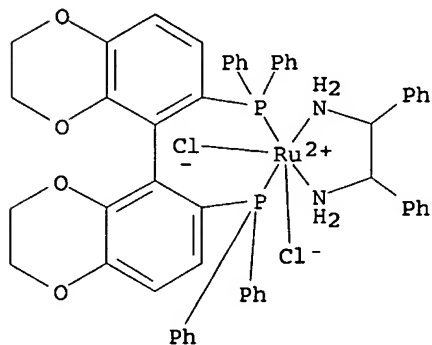
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. as catalyst for asym. synthesis)

RN 503269-79-2 HCAPLUS

CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'][[[(5R)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenylphosphine- κ P]]-], (OC-6-13)-(9CI) (CA INDEX NAME)



RN 503269-81-6 HCAPLUS

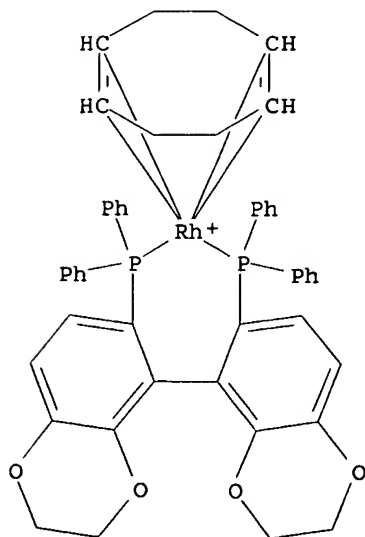
CN Ruthenium(1+), [(1,2,5,6- η)-1,5-cyclooctadiene][[(5R)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenylphosphine- κ P]]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 503269-80-5

CMF C48 H44 O4 P2 Rh

CCI CCS

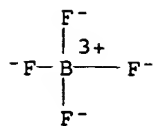


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



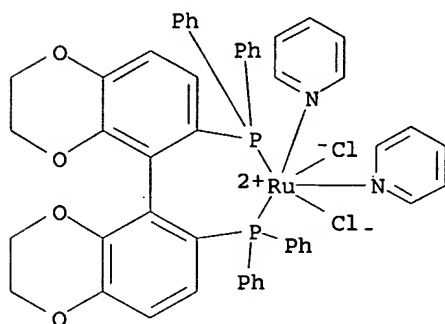
IT 503269-78-1P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepn. as catalyst for asym. synthesis and its complex with (S,S)-diphenylethylenediamine)

RN 503269-78-1 HCAPLUS

CN Ruthenium, dichlorobis(pyridine) [[(5R)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-6,6'-diyl]bis[diphenylphosphine-κP]]-, (OC-6-13)- (9CI) (CA INDEX NAME)



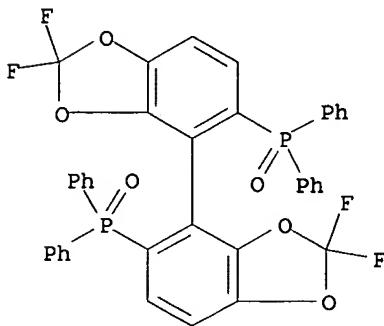
IT 503538-71-4P 503538-72-5P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)

(prepn., chromatog. sepn. from enantiomer, and redn. to give bis(alkylenedioxy)biphenyldiylldiphosphine ligand)

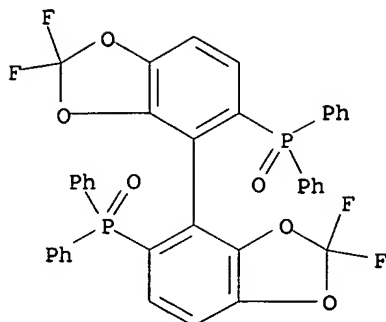
RN 503538-71-4 HCAPLUS

CN Phosphine oxide, [(4S)-2,2,2',2'-tetrafluoro[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



RN 503538-72-5 HCAPLUS

CN Phosphine oxide, [(4R)-2,2,2',2'-tetrafluoro[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



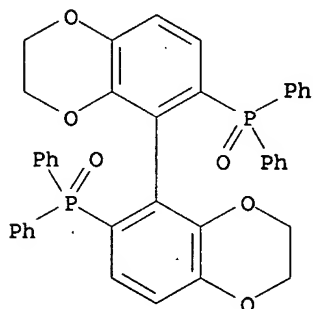
IT 503538-67-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(prepn., sepn. from enantiomer, and redn. to give
bis(alkylenedioxy)biphenyldiylidiphosphine ligand)

RN 503538-67-8 HCAPLUS

CN Phosphine oxide, [(5S)-2,2',3,3'-tetrahydro[5,5'-bi-1,4-benzodioxin]-
6,6'-diyl]bis(diphenyl- (9CI) (CA INDEX NAME)

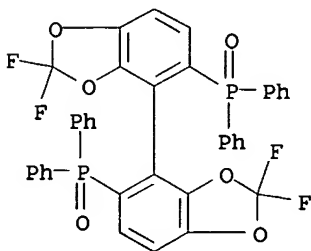
IT 503269-75-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(racemate; prepn. and redn. to give bis(alkylenedioxy)biphenyldiyl
ldiphosphine ligand)

RN 503269-75-8 HCAPLUS

CN Phosphine oxide, (2,2,2',2'-tetrafluoro[4,4'-bi-1,3-benzodioxole]-
5,5'-diyl)bis(diphenyl- (9CI) (CA INDEX NAME)

IC ICM C07F009-655

ICS B01J031-28

CC 78-7 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 29, 67

- IT **Ligands**
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (chiral; prepn. of bis(alkylenedioxy) biphenyldiylldiphosphines and their transition metal complexes as asym. synthesis catalysts)
- IT Transition metal complexes
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (phosphine; prepn. of transition metal bis(alkylenedioxy)biphenyldiylldiphosphine complexes as asym. synthesis catalysts)
- IT Phosphines
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (transition metal complexes; prepn. of transition metal bis(alkylenedioxy)biphenyldiylldiphosphine complexes as asym. synthesis catalysts)
- IT 445467-61-8P 503538-68-9P 503538-69-0P 503538-70-3P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and complexation with transition metals to give asym. synthesis catalysts)
- IT 445467-62-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and redn. to give bis(alkylenedioxy)biphenyldiylldiphosphine ligand)
- IT 12082-47-2DP, (Acetylacetonato)bis(ethylene)rhodium, in situ reaction product with bis(alkylenedioxy)biphenyldiylldiphosphine ligand
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. as catalyst for 1,4-asym. addn. of cyclohexenone with phenylboronic acid)
- IT 445467-61-8DP, in situ reaction product with ruthenium complex 503538-68-9DP, in situ reaction product with ruthenium complex
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. as catalyst for asym. hydrogenation)
- IT 10049-08-8DP, Ruthenium trichloride, reaction product with bis(alkylenedioxy)biphenyldiylldiphosphine ligand 12289-94-0DP, reaction product with bis(alkylenedioxy)biphenyldiylldiphosphine ligand 503269-77-0P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. as catalyst for asym. hydrogenation of ketones)
- IT 503269-79-2P 503269-81-6P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. as catalyst for asym. synthesis)
- IT 503269-78-1P
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. as catalyst for asym. synthesis and its complex with (S,S)-diphenylethylenediamine)
- IT 7439-88-5DP, Iridium, complexes with bis(alkylenedioxy)biphenyldiylldiphosphine ligand 7440-02-0DP, Nickel, complexes with bis(alkylenedioxy)biphenyldiylldiphosphine ligand 7440-05-3DP, Palladium, complexes with bis(alkylenedioxy)biphenyldiylldiphosphine ligand 7440-16-6DP, Rhodium, complexes with bis(alkylenedioxy)biphenyldiylldiphosphine ligand 7440-18-8DP, Ruthenium, complexes with bis(alkylenedioxy)biphenyldiylldiphosphine

ligand 7440-50-8DP, Copper, complexes with
 bis(alkylenedioxy)biphenyldiylldiphosphine ligand
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (prepn. as catalysts for asym. synthesis)

IT 503538-71-4P 503538-72-5P

RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PUR (Purification or recovery); RCT (Reactant); SPN
 (Synthetic preparation); PREP (Preparation); PROC
 (Process); RACT (Reactant or reagent)
 (prepn., chromatog. sepn. from enantiomer, and redn. to give
 bis(alkylenedioxy)biphenyldiylldiphosphine ligand)

IT 503538-67-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn., sepn. from enantiomer, and redn. to give
 bis(alkylenedioxy)biphenyldiylldiphosphine ligand)

IT 503269-75-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (racemate; prepn. and redn. to give bis(alkylenedioxy)biphenyldiyl
 ldiphosphine ligand)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L26 ANSWER 27 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:216177 HCAPLUS

DOCUMENT NUMBER: 139:214664

TITLE: Preparation of an optically active
 bis(diethylphosphino)biphenyl ligand designed
 for highly reactive catalytic processes

AUTHOR(S): Shibata, Tomomi; Tsuruta, Hideyuki; Danjo,
 Hiroshi; Imamoto, Tsuneo

CORPORATE SOURCE: Faculty of Science, Department of Chemistry,
 Chiba University, Inage-ku, Chiba, 263-8522,
 Japan

SOURCE: Journal of Molecular Catalysis A: Chemical (1
 2003), 196(1-2), 117-124
 CODEN: JMCCF2; ISSN: 1381-1169

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:214664

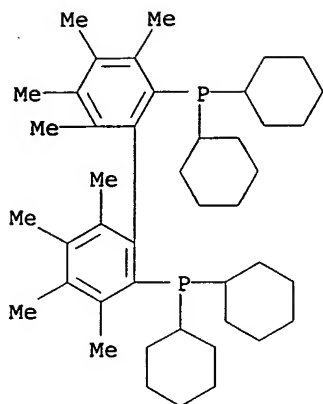
AB New optically active diphosphine ligands, (S)-2,2'-
 bis(diphenylphosphino)-3,3',4,4',5,5',6,6'-octamethylbiphenyl and
 (S)-2,2'-bis(diethylphosphino)-3,3',4,4',5,5',6,6'-
 octamethylbiphenyl (2c) were prepd. via optical resolu. of the
 corresponding phosphine oxides. The Rh complex of 2c proved
 efficient in the catalytic asym. hydrogenation of a dehydroamino
 acid deriv. even at -50 °C and gave 88% e.e. of hydrogenation
 product quant.

IT 586410-79-9P 590383-54-3P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic
 preparation); PREP (Preparation); RACT (Reactant or
 reagent); USES (Uses)
 (prepn. of optically-active biphenyl phosphine
 ligand for rhodium-catalyzed hydrogenation of
 acetamidocinnamate)

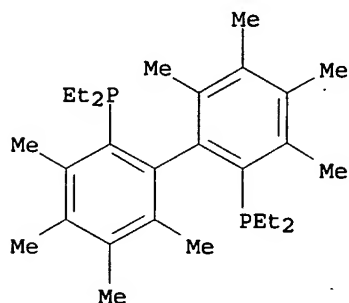
RN 586410-79-9 HCAPLUS

CN Phosphine, (3,3',4,4',5,5',6,6'-octamethyl[1,1'-biphenyl]-2,2'-
 diyl)bis[dicyclohexyl- (9CI) (CA INDEX NAME)



RN 590383-54-3 HCAPLUS

CN Phosphine, [(1S)-3,3',4,4',5,5',6,6'-octamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diethyl- (9CI) (CA INDEX NAME)



IT 590383-52-1P

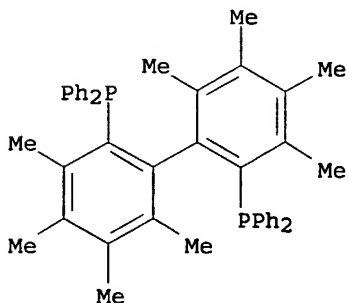
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of optically-active biphenyl phosphine
ligand for rhodium-catalyzed hydrogenation of
acetamidocinnamate)

RN 590383-52-1 HCAPLUS

CN Phosphine, [(1S)-3,3',4,4',5,5',6,6'-octamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



CC 34-2 (Amino Acids, Peptides, and Proteins)

Section cross-reference(s): 29, 75

IT 586410-79-9P 590383-54-3P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepn. of optically-active biphenyl phosphine ligand for rhodium-catalyzed hydrogenation of acetamidocinnamate)

IT 590383-52-1P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of optically-active biphenyl phosphine ligand for rhodium-catalyzed hydrogenation of acetamidocinnamate)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 28 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:943384 HCAPLUS

DOCUMENT NUMBER: 138:187889

TITLE: P-Chiral, Monodentate Ferrocenyl Phosphines, Novel Ligands for Asymmetric Catalysis

AUTHOR(S): Colby, Elizabeth A.; Jamison, Timothy F.

CORPORATE SOURCE: Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA

SOURCE: Journal of Organic Chemistry (2003), 68(1), 156-166

CODEN: JOCEAH; ISSN: 0022-3263

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 138:187889

AB Eight P-chiral monodentate ferrocenyl phosphines, e.g. (S)-ferrocenylmethylphenylphosphine, were prepd. in high enantiomeric excess (>95% ee in most cases) by way of an ephedrine-based oxazaphospholidine borane complex. Primary alkyl, secondary alkyl, and substituted arom. substituents were successfully introduced at the phosphorus center, along with ferrocenyl and Ph groups, generating phosphines of the general structure FcP(Ph)(R) (Fc = ferrocenyl, R = aryl, alkyl). The synthetic route employed provides facile access to a previously undeveloped class of chiral monophosphines. These compds. were evaluated as ligands in asym. catalytic reductive coupling of alkynes and aldehydes and were found to provide the desired chiral allylic alcs. with good regioselectivity and ee in many cases and with complete (E)-selectivity (>98:2) in all cases.

IT 497919-40-1P

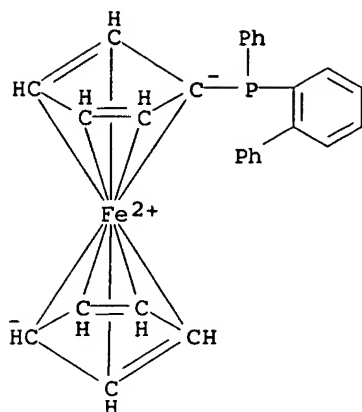
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of chiral monodentate ferrocenyl phosphines as novel ligands for regioselective nickel catalyzed reductive coupling of alkynes with aldehydes)

RN 497919-40-1 HCAPLUS

CN Ferrocene, [(R)-[1,1'-biphenyl]-2-ylphenylphosphino]- (9CI) (CA INDEX NAME)



CC 29-12 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 23

IT 190907-20-1P 497919-31-0P 497919-32-1P 497919-33-2P
497919-35-4P 497919-36-5P 497919-38-7P 497919-40-1P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of chiral monodentate ferrocenyl

phosphines as novel ligands for regioselective

nickel catalyzed reductive coupling of alkynes with aldehydes)

REFERENCE COUNT: 86 THERE ARE 86 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L26 ANSWER 29 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:879182 HCAPLUS

DOCUMENT NUMBER: 138:221639

TITLE: Synthesis of aminophosphine ligands with
binaphthyl backbones for silver(I)-catalyzed
enantioselective allylation of benzaldehyde

AUTHOR(S): Wang, Yi; Ji, Bao-Ming; Ding, Kui-Ling
CORPORATE SOURCE: State Key Laboratory of Organometallic
Chemistry, Shanghai Institute of Organic
Chemistry, Chinese Academy of Sciences,
Shanghai, 200032, Peop. Rep. China

SOURCE: Chinese Journal of Chemistry (2002),
20(11), 1300-1312

CODEN: CJOCEV; ISSN: 1001-604X

PUBLISHER: Science Press

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 138:221639

AB Aminophosphine ligands with binaphthalene and octahydrobinaphthalene
backbones were synthesized from 2-amino-2'-hydroxy-1,1'-binaphthyl
(NOBIN) and 2-amino-2'-hydroxy-5,5',6,6',7,7',8,8'-octahydro-1,1'-
binaphthyl (H8-NOBIN), resp. Asym. induction efficiency of
silver(I)-ligand complexes was examd. for allylation of benzaldehyde
with allyltributyltin, yielding 4-phenyl-4-hydroxy-1-butene (1).
For example, (S)-1 was obtained (100% yield, 54.5% ee) under
optimized reaction conditions via allylation catalyzed by
silver(I)/(S)-(+)-2-pyrrolidino-2'-diphenylphosphino-1,1'-binaphthyl
complex. Effects of binaphthyl backbone chirality and substituents
at chelating N, P atoms on enantioselectivity are discussed.

IT 255882-15-6P 413578-90-2P 413578-93-5P
413578-94-6P 413578-97-9P 413578-98-0P
500718-20-7P 500718-21-8P 500718-22-9P
500718-23-0P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

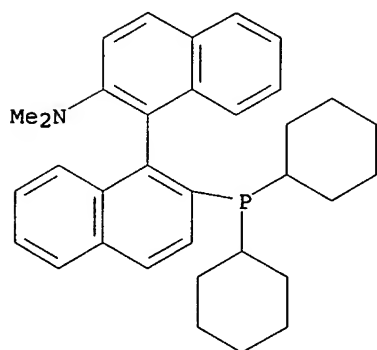
PREP (Preparation); USES (Uses)

(prepn. of aminophosphine ligands

with binaphthalene and octahydronaphthalene backbones for
silver-catalyzed enantioselective allylation of benzaldehyde with
allyltributyltin)

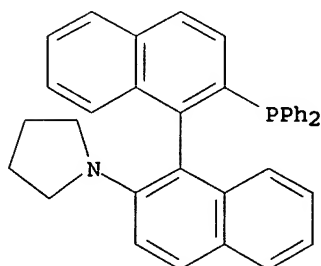
RN 255882-15-6 HCAPLUS

CN [1,1'-Binaphthalen]-2-amine, 2'-(dicyclohexylphosphino)-N,N-dimethyl-, (R)- (9CI) (CA INDEX NAME)



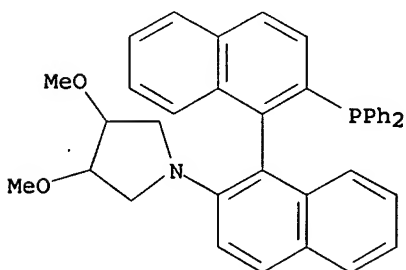
RN 413578-90-2 HCAPLUS

CN Pyrrolidine, 1-[(1S)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]- (9CI) (CA INDEX NAME)



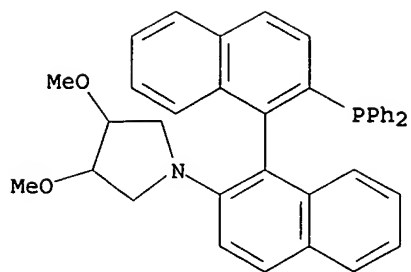
RN 413578-93-5 HCAPLUS

CN Pyrrolidine, 1-[(1S)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-3,4-dimethoxy-, (3S,4S)- (9CI) (CA INDEX NAME)



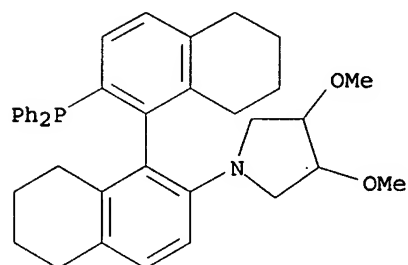
RN 413578-94-6 HCAPLUS

CN Pyrrolidine, 1-[(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-3,4-dimethoxy-, (3S,4S)- (9CI) (CA INDEX NAME)



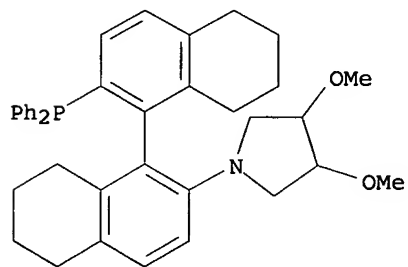
RN 413578-97-9 HCAPLUS

CN Pyrrolidine, 1-[(1S)-2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]-3,4-dimethoxy-, (3S,4S)- (9CI)
(CA INDEX NAME)



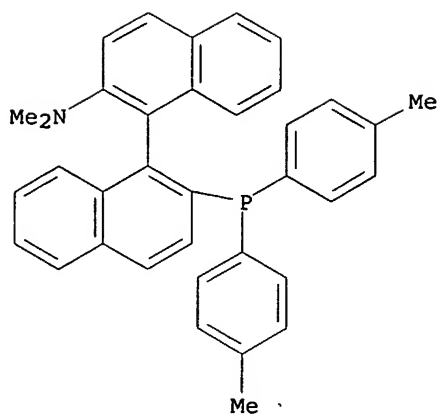
RN 413578-98-0 HCAPLUS

CN Pyrrolidine, 1-[(1R)-2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]-3,4-dimethoxy-, (3S,4S)- (9CI)
(CA INDEX NAME)

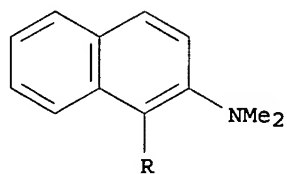
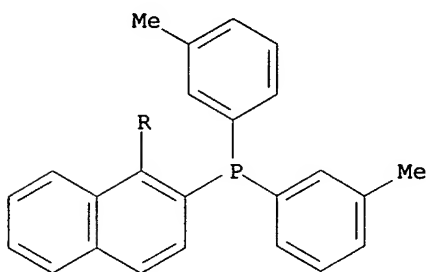


RN 500718-20-7 HCAPLUS

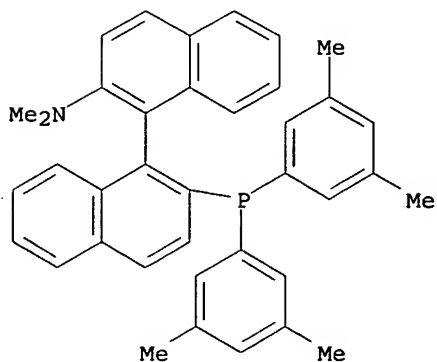
CN [1,1'-Binaphthalen]-2-amine, 2'-[bis(4-methylphenyl)phosphino]-N,N-dimethyl-, (1R)- (9CI) (CA INDEX NAME)



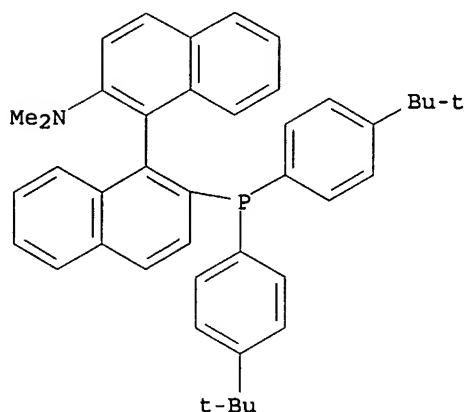
RN 500718-21-8 HCAPLUS
 CN [1,1'-Binaphthalen]-2-amine, 2'-[bis(3-methylphenyl)phosphino]-N,N-dimethyl-, (1R)-(9CI) (CA INDEX NAME)



RN 500718-22-9 HCAPLUS
 CN [1,1'-Binaphthalen]-2-amine, 2'-[bis(3,5-dimethylphenyl)phosphino]-N,N-dimethyl-, (1R)-(9CI) (CA INDEX NAME)



RN 500718-23-0 HCAPLUS
 CN [1,1'-Binaphthalen]-2-amine, 2'-[bis{4-(1,1-dimethylethyl)phenyl}phosphino]-N,N-dimethyl-, (1R)- (9CI) (CA INDEX NAME)



CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 67
 IT 255882-15-6P 413578-90-2P 413578-93-5P
 413578-94-6P 413578-97-9P 413578-98-0P
 500718-20-7P 500718-21-8P 500718-22-9P
 500718-23-0P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of aminophosphine ligands
 with binaphthalene and octahydronaphthalene backbones for
 silver-catalyzed enantioselective allylation of benzaldehyde with
 allyltributyltin)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L26 ANSWER 30 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:750730 HCAPLUS
 DOCUMENT NUMBER: 137:288102
 TITLE: Preparation of ruthenium-phosphine-diamine
 complexes and diamine ligands and method for
 preparation of optical active alcohols using the
 ruthenium complex as the catalyst
 INVENTOR(S): Ooka, Koji; Inoue, Tsutomu
 PATENT ASSIGNEE(S): Nippon Soda Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002284790	A2	20021003	JP 2002-6604	20020115

PRIORITY APPLN. INFO.: JP 2001-6256 A

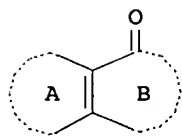
200101

15

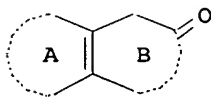
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OTHER SOURCE(S):
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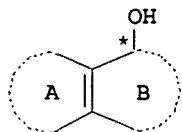
CASREACT 137:288102; MARPAT 137:288102



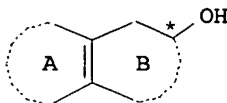
I



II



III



IV

AB A method for prepn. of optically active alcs. or β -amino alcs. in high yields with high stereoselectivity by asym. hydrogenation of cyclic ketones or α -amino ketones using a ruthenium-phosphine-diamine complex and its diamine ligand as the catalyst is provided. Ruthenium-phosphine-diamine complexes represented by formula $\text{Ru}(X)(Y)(\text{Px})\text{n1}[\text{R1R2C}^*(\text{NR3R4})-\text{A}-\text{C}^*(\text{NR7R8})\text{R5R6}]$ [wherein X,Y = H,halo, CO_2H , HO, C1-20 alkoxy; Px = phosphine ligand; R1 -R9 = H, (un)substituted C1-20 alkyl, C1-20 alkenyl, C3-8 cycloalkyl, aralkyl, or aryl; or either of R1 and R2 is linked to either of R3 and R4 to form a ring; or either of R5 and R6 is linked to either of R7 and R8 to form a ring; A = (un)substituted C1-3 alkylene optionally contg. an ether linkage, C3-8 cycloalkylene, arylene, or or bivalent heterocyclic ring; * denotes an asym. carbon atom; n1 = 1,2] and diamine ligands represented by formula $\text{R1R2C}^*(\text{NR3R4})-\text{A}-\text{C}^*(\text{NR7R8})\text{R5R6}$ (R1 -R8 = same as above) are prepd. Also disclosed are (1) asym. hydrogenation of condensed cyclic ketones [I or II; ring A = (un)substituted 3 to 8-membered ring; ring B = (un)substituted 4 to 8-membered ring optionally contg. heteroatoms] to optically active alcs. (III or IV; ring A and B = same as above; * denotes an asym. carbon atom) or (2) asym. hydrogenation of α -amino ketones represented by formula $\text{RaCOCH}(\text{Rb})\text{Rc}$ [wherein Ra, Rc = H, (un)substituted C1-20 alkyl, C2-20 alkenyl, C3-8 cycloalkyl, aralkyl, or aryl; Rb = $\text{N}(\text{R11})\text{COR9}$, $\text{N}(\text{COR10})\text{COR9}$, NR11R9 ; R9, R10, R11 = H, CHO, (un)substituted C1-20 alkyl, C2-20 alkenyl, C1-20 alkoxy, C3-8 cycloalkyl, C3-8 cycloalkoxy, aralkyl, aralkyloxy, aryl, or aryloxy; or R9 and R11 or R9 and R10 are linked to each other to form a 5 to 8-membered N-contg. heterocyclic ring] to optically active α -amino alcs. represented by formula $\text{RaC}^*(\text{OH})-\text{CH}(\text{Rb})\text{Rc}$ (Ra, Rb, Rc, * = same as above) using H or hydrogen donor as the H source in the presence of the above ruthenium complex.

IT 466695-99-8P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

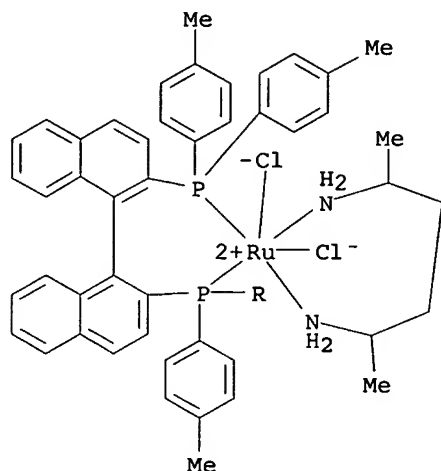
(prepn. of ruthenium-phosphine-diamine complexes and diamine ligands and prepn. of optical active alcs. or β -amino alcs. by asym. hydrogenation of cyclic ketones or α -amino ketones using ruthenium complex as catalyst)

RN 466695-99-8 HCAPLUS

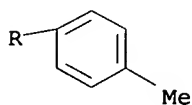
CN Ruthenium, [(1S)-[1,1'-binaphthalene]-2,2'-diylbis[bis(4-

methylphenyl)phosphine-κP]]dichloro[(2R,5R)-2,5-hexanediamine-κN,κN']-, (OC-6-13)- (9CI) (CA INDEX NAME)

PAGE 1-A

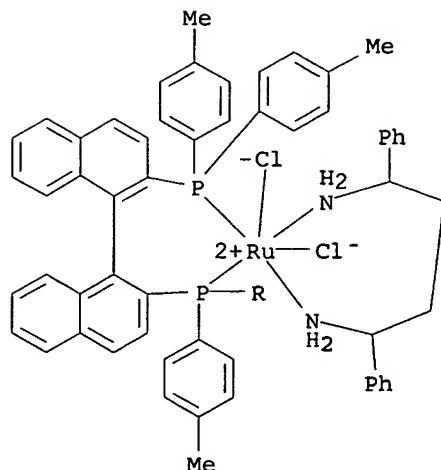


PAGE 2-A

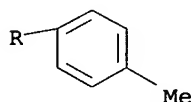


IT 466696-00-4P 466696-02-6P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of ruthenium-phosphine-diamine
 complexes and diamine ligands and prepn. of
 optical active alcs. or β-amino alcs. by asym. hydrogenation
 of cyclic ketones or α-amino ketones using ruthenium
 complex as catalyst)
 RN 466696-00-4 HCAPLUS
 CN Ruthenium, [(1R)-[1,1'-binaphthalene]-2,2'-diylbis[bis(4-
 methylphenyl)phosphine-κP]]dichloro[(1R,4R)-1,4-diphenyl-1,4-
 butanediamine-κN,κN']-, (OC-6-13)- (9CI) (CA INDEX
 NAME)

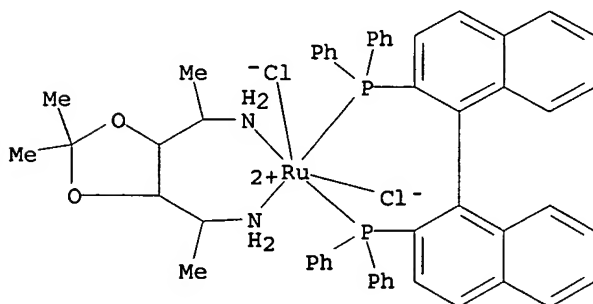
PAGE 1-A



PAGE 2-A



RN 466696-02-6 HCAPLUS
 CN Ruthenium, [(1S)-[1,1'-binaphthalene]-2,2'-diylbis[diphenylphosphine-κP]]dichloro[2,5-di(amino-κN)-1,2,5,6-tetradecy-3,4-O-(1-methylethylidene)-D-mannitol]-, (OC-6-13)- (9CI) (CA INDEX NAME)



IC ICM C07F015-00
 ICS B01J031-24; C07B053-00; C07C029-145; C07C033-26; C07C035-27;
 C07C211-27; C07C231-12; C07C233-73; C07B061-00; C07M007-00
 CC 78-7 (Inorganic Chemicals and Reactions)
 IT 466635-81-4P 466695-99-8P
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. of ruthenium-phosphine-diamine complexes and diamine ligands and prepn. of optical active alcs. or β-amino alcs. by asym. hydrogenation of cyclic ketones or α-amino ketones using ruthenium)

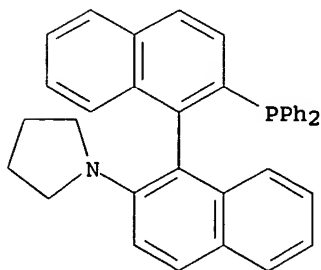
complex as catalyst)
 IT 301833-60-3P 466696-00-4P 466696-02-6P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of ruthenium-phosphine-diamine
 complexes and diamine ligands and prepn. of
 optical active alcs. or β -amino alcs. by asym. hydrogenation
 of cyclic ketones or α -amino ketones using ruthenium
 complex as catalyst)

L26 ANSWER 31 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2001:905633 HCAPLUS
 DOCUMENT NUMBER: 136:325311
 TITLE: The synthesis of a new generation of MAP ligands
 containing two types of chiral elements for
 asymmetric catalysis
 AUTHOR(S): Wang, Yi; Li, Xin; Ding, Kuiling
 CORPORATE SOURCE: State Key Laboratory of Organometallic
 Chemistry, The Chinese Academy of Sciences,
 Shanghai Institute of Organic Chemistry,
 Shanghai, 200032, Peop. Rep. China
 SOURCE: Tetrahedron Letters (2001), Volume
 Date 2002, 43(1), 159-161
 CODEN: TELEAY; ISSN: 0040-4039
 PUBLISHER: Elsevier Science Ltd.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 136:325311

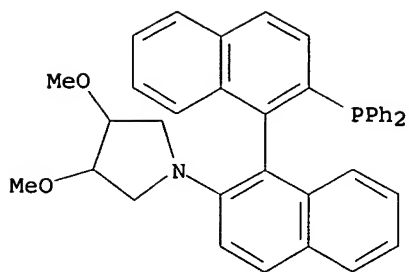
AB A series of novel aminophosphine ligands contg. both axial and
 central chirality have been synthesized for the first time from
 2-amino-2'-hydroxy-1,1'-binaphthyl and tartaric acid derivs. Their
 capability for asym. induction in the Pd-catalyzed reaction of
 1,3-diphenylprop-2-en-1-yl acetate with di-Me malonate was
 investigated and the results clearly demonstrated that correct
 assembly of axial chirality in the scaffold and central chirality of
 the modification group was very important for achieving higher
 enantioselectivity in the reaction. In a matched case, the asym.
 allylation product could be obtained in 85.6% ee.

IT 413578-90-2P 413578-93-5P 413578-94-6P
 413578-97-9P 413578-98-0P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of pyrrolidinylbinaphthyldiphenylphosphine
 chiral ligands for the addn. of malonate to
 diphenylpropenyl acetate)

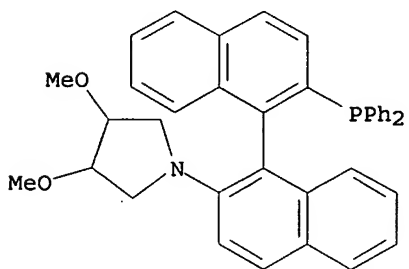
RN 413578-90-2 HCAPLUS
 CN Pyrrolidine, 1-[(1S)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-
 (9CI) (CA INDEX NAME)



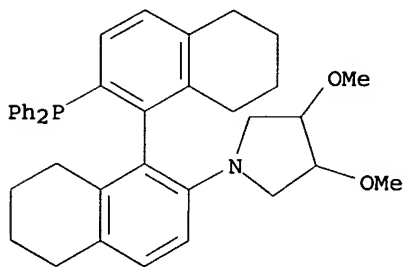
RN 413578-93-5 HCAPLUS
 CN Pyrrolidine, 1-[(1S)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-
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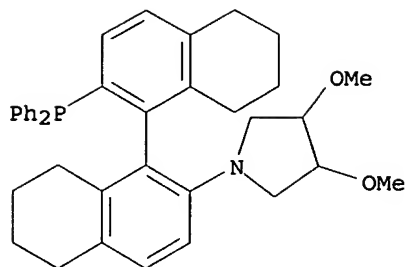
RN 413578-94-6 HCAPLUS
 CN Pyrrolidine, 1-[(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-3,4-dimethoxy-, (3S,4S)- (9CI) (CA INDEX NAME)



RN 413578-97-9 HCAPLUS
 CN Pyrrolidine, 1-[(1S)-2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]-3,4-dimethoxy-, (3S,4S)- (9CI) (CA INDEX NAME)



RN 413578-98-0 HCAPLUS
 CN Pyrrolidine, 1-[(1R)-2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]-3,4-dimethoxy-, (3S,4S)- (9CI) (CA INDEX NAME)



CC 25-24 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
 IT 413578-90-2P 413578-93-5P 413578-94-6P
 413578-97-9P 413578-98-0P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of pyrrolidinylnaphthylidiphenylphosphine
 chiral ligands for the addn. of malonate to
 diphenylpropenyl acetate)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L26 ANSWER 32 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:904192 HCAPLUS

DOCUMENT NUMBER: 136:37771

TITLE: Preparation of chiral phosphine ligands and
 corresponding ruthenium complexes as catalysts
 for asymmetric hydrogenation

INVENTOR(S): Burk, Mark Joseph; Malan, Christophe Guillaume

PATENT ASSIGNEE(S): Chirotech Technology Limited, UK

SOURCE: PCT Int. Appl., 19 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001094359	A1	20011213	WO 2001-GB2467	20010604
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US 6508753
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B2 20030121
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AT 2001-936640

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PRIORITY APPLN. INFO.:

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GB 2001-1458

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WO 2001-GB2467

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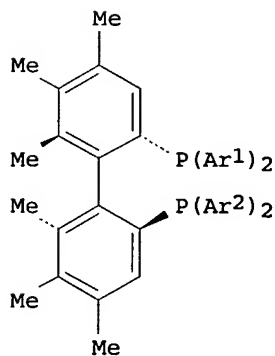
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OTHER SOURCE(S):
GI

CASREACT 136:37771; MARPAT 136:37771

<--



AB Novel phosphine ligands [I; Ar1, Ar2 = independently Ph, optionally substituted with one, two or more alkyl or alkoxy groups (e.g., p-tolyl, 3,5-dimethylphenyl, 4-methoxy-3,5-dimethylphenyl)] were prepd. Ruthenium complexes of these ligands are useful as catalysts in stereoselective hydrogenation. Thus, (R)-3,3',4,4',5,5'-hexamethyl-6,6'-bis-diphenylphosphonylbiphenyl ((R)-HexaPhemp) (synthetic prepn. given) is complexed with [Ru(benzene)Cl₂]₂ in the presence of (R,R)-diphenylethylenediamine (DPEN) to give (R)-HexaPhemp-RuCl₂-(R,R)-DPEN (II). Complex II hydrogenates acetophenone in 86% ee.

IT 380383-25-5P 380383-26-6P 380383-27-7P
380383-30-2P 380383-31-3P 380383-32-4P

380383-34-6P 380394-53-6P 380394-54-7P

380394-55-8P 380394-56-9P 380394-59-2P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

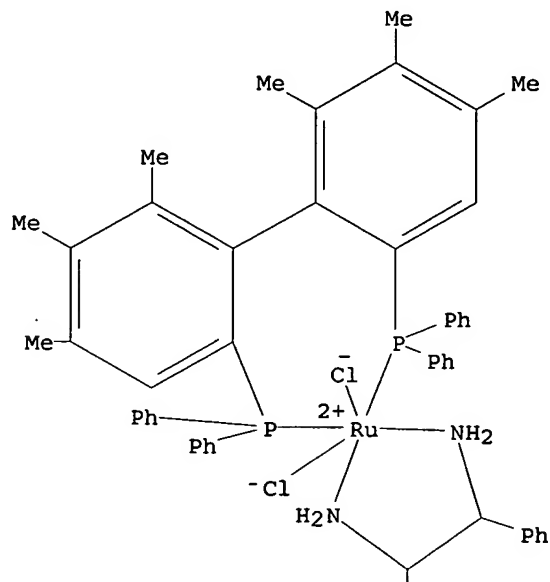
(prepn. of chiral phosphine ligands

and corresponding ruthenium complexes as catalysts for asym.
hydrogenation)

RN 380383-25-5 HCAPLUS

CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine-
 $\kappa N, \kappa N'$] [[(1R)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-
2,2'-diyl]bis[diphenylphosphine- κP]]-, (OC-6-13)- (9CI) (CA
INDEX NAME)

PAGE 1-A



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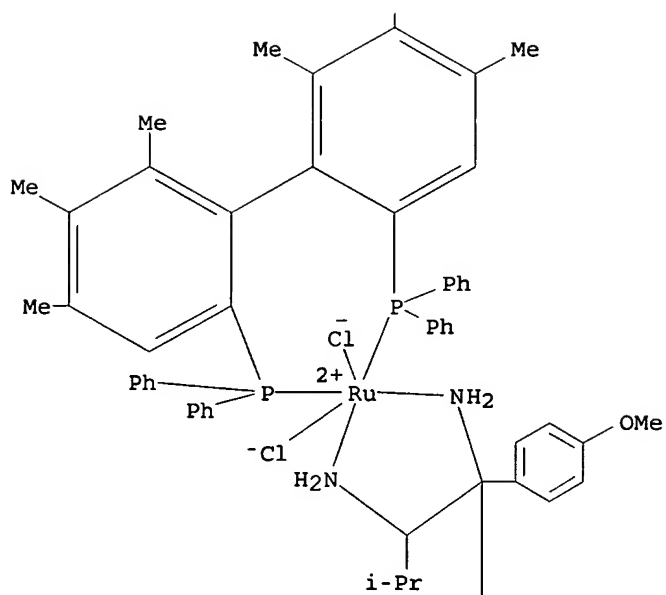
CN Ruthenium, [(2R)-1,1-bis(4-methoxyphenyl)-3-methyl-1,2-butanediamine-
 $\kappa N, \kappa N'$]dichloro[[[(1R)-4,4',5,5',6,6'-hexamethyl[1,1'-
biphenyl]-2,2'-diyl]bis[diphenylphosphine- κP]]-, (OC-6-13)-
(9CI) (CA INDEX NAME)

PAGE 1-A

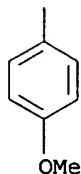
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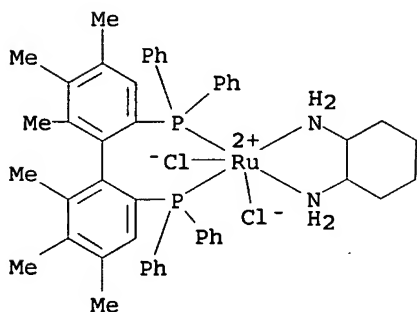
PAGE 2-A



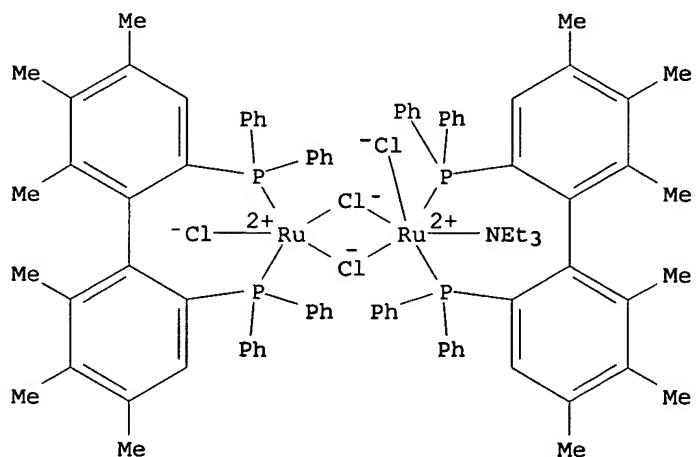
PAGE 3-A



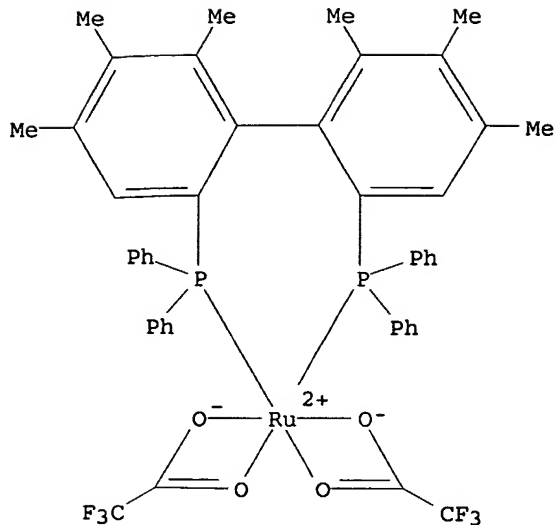
RN 380383-27-7 HCAPLUS
 CN Ruthenium, dichloro[(1S,2S)-1,2-cyclohexanediamine- κ N, κ N'][[[(1S)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine- κ P]]-, (OC-6-13)- (9CI) (CA INDEX NAME)



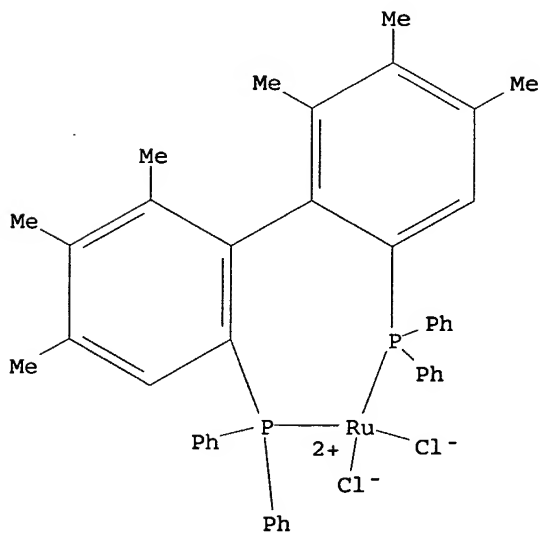
RN 380383-30-2 HCAPLUS
 CN Ruthenium, di- μ -chlorodichloro(N,N-diethylethanamine)bis[(4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine- κ P]]di- (9CI) (CA INDEX NAME)



RN 380383-31-3 HCAPLUS
 CN Ruthenium, [[[(1S)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine- κ P]]bis(trifluoroacetato- κ O, κ O')-, (OC-6-13)- (9CI) (CA INDEX NAME)



RN 380383-32-4 HCAPLUS
 CN Ruthenium, dichloro[[[(1S)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine-κP]]-], (SP-4-2)- (9CI) (CA INDEX NAME)

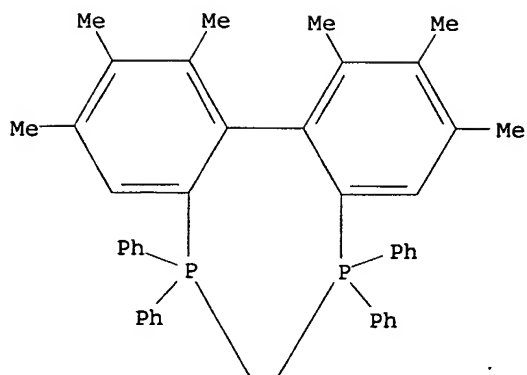


RN 380383-34-6 HCAPLUS
 CN Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][[(1S)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine-κP]]-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

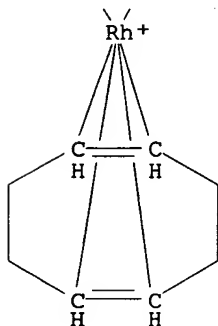
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PAGE 2-A

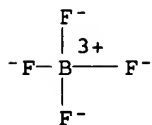


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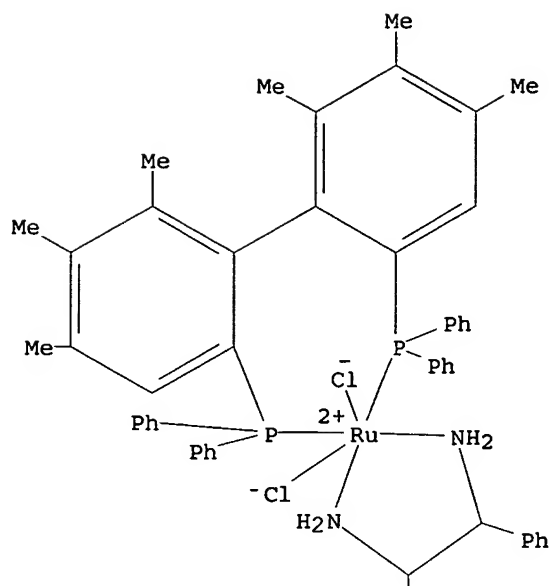
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RN 380394-53-6 HCAPLUS

CN Ruthenium, dichloro[(1R,2R)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'][[[(1R)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine- κ P]]-, (OC-6-13)- (9CI) (CA INDEX NAME)

PAGE 1-A

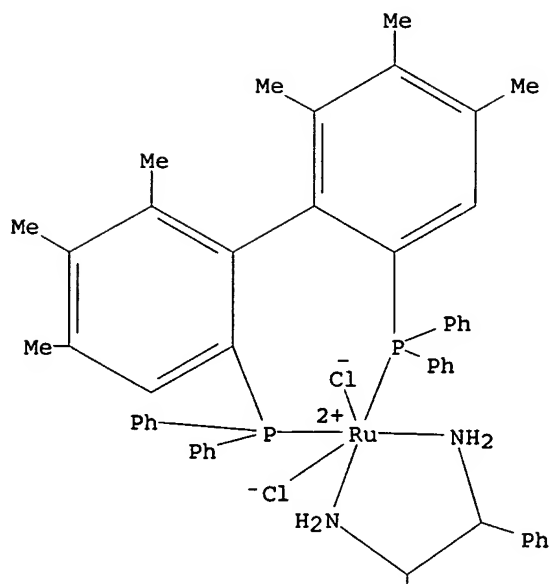


PAGE 2-A

Ph

RN 380394-54-7 HCAPLUS
 CN Ruthenium, dichloro[(1S,2S)-1,2-diphenyl-1,2-ethanediamine- κ N, κ N'][[[(1S)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine- κ P]]-, (OC-6-13)- (9CI) (CA INDEX NAME)

PAGE 1-A

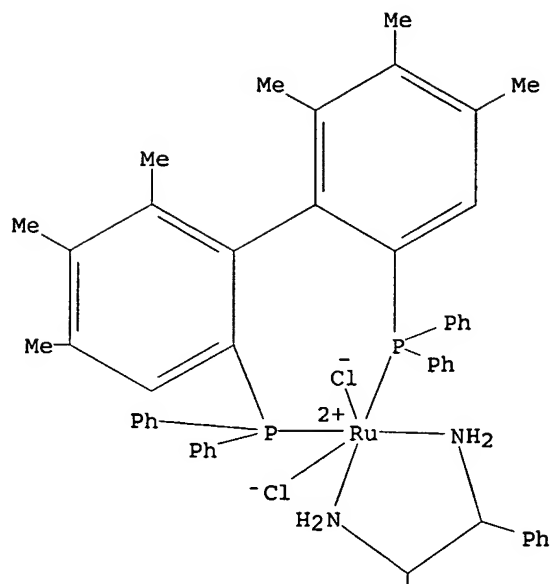


PAGE 2-A

|
Ph

RN 380394-55-8 HCAPLUS
 CN Ruthenium, dichloro[(1R,2R)-1,2-diphenyl-1,2-ethanediamine-
 κ N, κ N'][[[(1S)-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-
 2,2'-diyl]bis[diphenylphosphine- κ P]]-, (OC-6-13)- (9CI) (CA
 INDEX NAME)

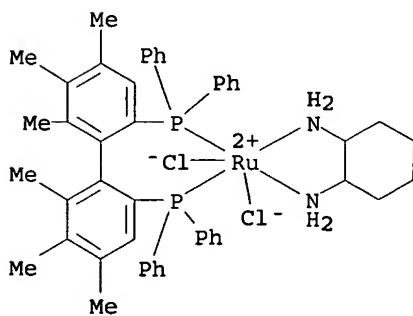
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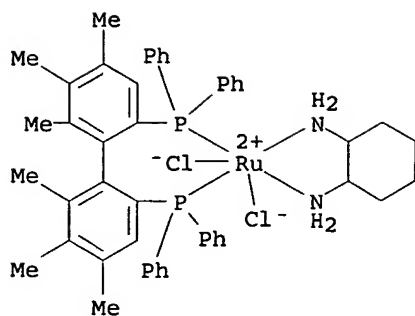
PAGE 2-A

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Ph

RN 380394-56-9 HCAPLUS
 CN Ruthenium, dichloro[(1R,2R)-1,2-cyclohexanediamine- κ N, κ N'] [[[1S]-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine- κ P]]-, (OC-6-13)- (9CI) (CA INDEX NAME)



RN 380394-59-2 HCAPLUS
 CN Ruthenium, dichloro[(1R,2R)-1,2-cyclohexanediamine- κ N, κ N'] [[[1R]-4,4',5,5',6,6'-hexamethyl[1,1'-biphenyl]-2,2'-diyl]bis[diphenylphosphine- κ P]]-, (OC-6-13)- (9CI) (CA INDEX NAME)



IC ICM C07F009-50
ICS C07F015-00; C07B053-00; C07M007-00
CC 29-7 (Organometallic and Organometalloidal
Compounds)
Section cross-reference(s): 67
IT 380383-25-5P 380383-26-6P 380383-27-7P
380383-30-2P 380383-31-3P 380383-32-4P
380383-34-6P 380394-53-6P 380394-54-7P
380394-55-8P 380394-56-9P 380394-59-2P
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of chiral phosphine ligands
and corresponding ruthenium complexes as catalysts for asym.
hydrogenation)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L26 ANSWER 33 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:772171 HCAPLUS
DOCUMENT NUMBER: 135:318588
TITLE: Biaryl phosphine and amine ligands for improved
transition metal-catalyzed processes
INVENTOR(S): Buchwald, Stephen L.; Old, David W.; Wolfe, John
P.; Palucki, Michael; Kamikawa, Ken
PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA
SOURCE: U.S., 55 pp., Cont.-in-part of U.S. Ser. No.
113,478.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6307087	B1	20011023	US 1999-231315	199901 13
US 6395916	B1	20020528	US 1998-113478	199807 10
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 WO 2000002887 A3 20000629
 W: CA, JP
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 NL, PT, SE
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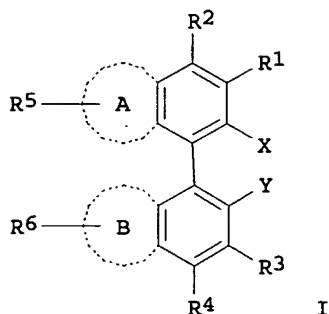
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OTHER SOURCE(S): CASREACT 135:318588; MARPAT 135:318588
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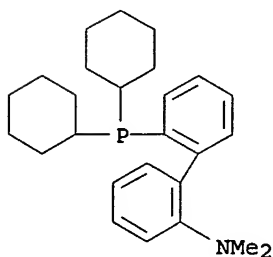
AB The present invention relates to the **prepn.** of novel biaryl **phosphine** and amine **ligands** (I) [wherein A and B = independently fused monocyclic or polycyclic cycloalkyl, cycloalkenyl, aryl, or heterocyclic rings of 4-8 atoms; X = NR₂, PR₂, AsR₂, OR, or SR; Y = NR₂, PR₂, AsR₂, OR, SR, SiR₃, alkyl, or H; R-R₆ = independently H, halogen, (hetero)alkyl, alkenyl, alkynyl, hydroxy, alkoxy, silyloxy, amino, nitro, sulfhydryl, amide, carbonyl, ketone, anhydride, silyl, thioalkyl, ketone, ester, nitrile, (hetero)aryl, etc.] for **transition metals** and their use in **metal-catalyzed carbon-heteroatom and carbon-carbon bond-forming reactions**. Unexpected improvements over the prior art were demonstrated in **transition metal-catalyzed aryl amination reactions**, Suzuki couplings giving both biaryl and alkylaryl products, arylations and vinylations at the position α to carbonyl groups, and carbon-oxygen bond formation. The **ligands** and methods of the invention enable transformations utilizing aryl chlorides and bromides at room temp. at synthetically useful rates with extremely small amts. of catalyst relative to the limiting reagent. For example, coupling of p-chlorobenzonitrile and morpholine was catalyzed by 2.5 mol% Pd₂(dba)₃, 7.5 mol% of 2-(N,N-dimethylamino)-2'-(dicyclohexylphosphino)biphenyl, and NaOBu-t in DME at room temp. to provide 4-(4-morpholinyl)benzonitrile in 96% yield. Thus, the subject processes provide improvements in many features of the **transition metal-catalyzed reactions**, including the range of suitable substrates, reaction conditions, and efficiency.

IT 213697-53-1P 224311-51-7P, 2-(Di-tert-

butylphosphino)biphenyl 255835-81-5P 255835-82-6P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); SPN
 (Synthetic preparation); PREP (Preparation); USES (Uses)
 (biaryl phosphine and amine ligands for improved transition
 metal-catalyzed processes)

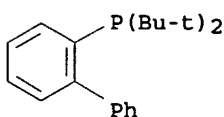
RN 213697-53-1 HCAPLUS

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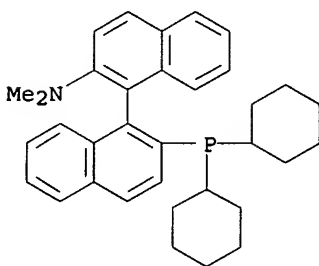
RN 224311-51-7 HCAPLUS

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 INDEX NAME)



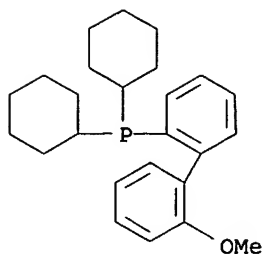
RN 255835-81-5 HCAPLUS

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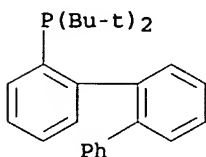


RN 255835-82-6 HCAPLUS

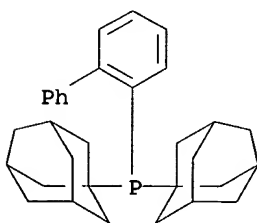
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 INDEX NAME)



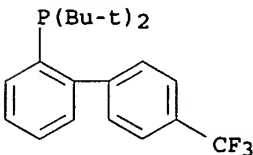
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 2(Di-t-butylphosphino)-4'-(trifluoromethyl)biphenyl
 255835-84-8P 255882-14-5P
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);
 PREP (Preparation)
 (biaryl phosphine and amine ligands for improved transition
 metal-catalyzed processes)
 RN 224311-54-0 HCAPLUS
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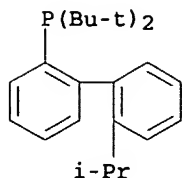
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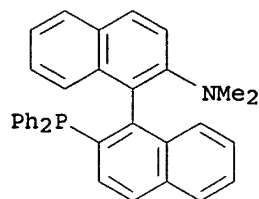
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 CN Phosphine, bis(1,1-dimethylethyl) [4'-(trifluoromethyl) [1,1'-
 biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



RN 255835-84-8 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl) [2'-(1-methylethyl) [1,1'-biphenyl]-
 2-yl]- (9CI) (CA INDEX NAME)



RN 255882-14-5 HCAPLUS
 CN [1,1'-Binaphthalen]-2-amine, 2'-(diphenylphosphino)-N,N-dimethyl-
 (9CI) (CA INDEX NAME)



IC ICM C07C255-03
 ICS C07F009-28; C07D265-30; C07D211-70; C07D209-04
 INCL 558388000
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 25
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 transition metal catalyst; amination aryl chloride
 bromide palladium catalysts; Suzuki coupling aryl chloride bromide
 palladium catalysts; ketone arylation palladium catalysts
 IT Amines, preparation
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (arom.; biaryl phosphine and amine ligands
 for improved transition metal-catalyzed
 processes)
 IT Ketones, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (arom.; biaryl phosphine and amine ligands
 for improved transition metal-catalyzed
 processes)
 IT Phosphines
 RL: CAT (Catalyst use); USES (Uses)
 (biaryl phosphine and amine ligands for improved transition
 metal-catalyzed processes)
 IT Biaryls
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (biaryl phosphine and amine ligands for improved transition
 metal-catalyzed processes)
 IT Transition metal complexes
 RL: CAT (Catalyst use); USES (Uses)
 (phosphine; biaryl phosphine and amine ligands for improved
 transition metal-catalyzed processes)
 IT Phosphines
 RL: CAT (Catalyst use); USES (Uses)
 (transition metal complexes; biaryl phosphine and amine ligands
 for improved transition metal-catalyzed processes)
 IT 127-09-3, Sodium acetate 534-17-8 584-08-7, Potassium carbonate
 3375-31-3, Palladium diacetate 6476-37-5,
 Dicyclohexylphenylphosphine 7778-53-2 7789-23-3, Potassium
 fluoride 13400-13-0, Cesium fluoride 14221-01-3,

Tetrakis(triphenylphosphine)palladium 51364-51-3,
 Tris(dibenzylideneacetone)dipalladium 54000-83-8,
 2,6-Dimethoxyphenyl-di-t-butylphosphine 166330-10-5 213774-71-1
 255837-14-0, 2,4,6-Trimethoxyphenyl-di-t-butylphosphine

RL: CAT (Catalyst use); USES (Uses)

(biaryl phosphine and amine ligands for improved transition
 metal-catalyzed processes)

IT 213697-53-1P 224311-51-7P, 2-(Di-tert-
 butylphosphino)biphenyl 255835-81-5P 255835-82-6P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); SPN
 (Synthetic preparation); PREP (Preparation); USES (Uses)

(biaryl phosphine and amine ligands for improved transition
 metal-catalyzed processes)

IT 92-69-3P, 4-Hydroxybiphenyl 92-91-1P, 4-Acetylbiphenyl 92-93-3P,
 4-Nitrobiphenyl 612-75-9P, 3,3'-Dimethylbiphenyl 613-37-6P
 644-08-6P 720-75-2P 825-55-8P, 2-Phenylthiophene 2142-66-7P,
 2-Acetylbiphenyl 2920-38-9P, 4-Cyanobiphenyl 2928-43-0P,
 2-Hydroxymethylbiphenyl 3976-34-9P, 2,6-Dimethylbiphenyl
 4075-79-0P, n-Acetyl-4-aminobiphenyl 5405-15-2P 7372-85-2P,
 2,5-Dimethylbiphenyl 10282-31-2P 17057-88-4P 19853-10-2P,
 [1,1'-Biphenyl]-2-acetonitrile 23676-05-3P 31144-33-9P
 39253-43-5P 39910-98-0P, n-(4-Acetylphenyl)morpholine
 54660-04-7P, n-(4-Methoxyphenyl)pyrrolidine 76650-29-8P
 76708-78-6P 81693-80-3P 82749-62-0P 92495-53-9P
 138900-16-0P, N-(4-Fluorophenyl)indole 167283-32-1P,
 N-(4-Methylphenyl)indole 171092-38-9P, 3-(3-Acetylphenyl)pyridine
 174307-96-1P 180336-54-3P, N-(2,5-Dimethylphenyl)-N-methylaniline
 197172-67-1P 213697-51-9P, n-(2,5-Dimethylphenyl)morpholine
 213697-52-0P 213697-65-5P 213697-66-6P 224311-54-0P
 224311-55-1P 251320-77-1P 251320-78-2P 251320-81-7P,
 3-Acetyl-3',5'-dimethoxybiphenyl 251320-82-8P,
 4-Carbomethoxy-3'-acetylbiphenyl 251320-84-0P 255835-83-7P
 , 2-(Di-t-butylphosphino)-4'-(trifluoromethyl)biphenyl
 255835-84-8P 255835-85-9P 255882-14-5P

RL: IMF (Industrial manufacture); SPN (Synthetic preparation);

PREP (Preparation)

(biaryl phosphine and amine ligands for improved transition
 metal-catalyzed processes)

REFERENCE COUNT: 131 THERE ARE 131 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L26 ANSWER 34 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:462837 HCAPLUS

DOCUMENT NUMBER: 135:288825

TITLE: Palladium-catalyzed asymmetric allylic
 alkylation in the presence of a chiral 'light
 fluorous' phosphine ligand

AUTHOR(S): Cavazzini, Marco; Pozzi, Gianluca; Quici,
 Silvio; Maillard, David; Sinou, Denis

CORPORATE SOURCE: Centro CNR Sintesi e Stereochimica di Speciali
 Sistemi Organici, Milan, 20133, Italy

SOURCE: Chemical Communications (Cambridge, United
 Kingdom) (2001), (13), 1220-1221

CODEN: CHCOFS; ISSN: 1359-7345

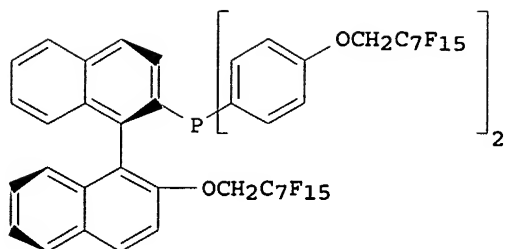
PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 135:288825

GI



I

AB The easily accessible, enantiopure (R)-(+)-2-diarylphosphino-2'-alkoxy-1,1'-binaphthyl I bearing three fluorous ponytails is an efficient ligand in the palladium-catalyzed asym. allylic substitution of 1,3-diphenylprop-2-enyl acetate affording chiral products of up to 87% ee.

IT 365240-77-3P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

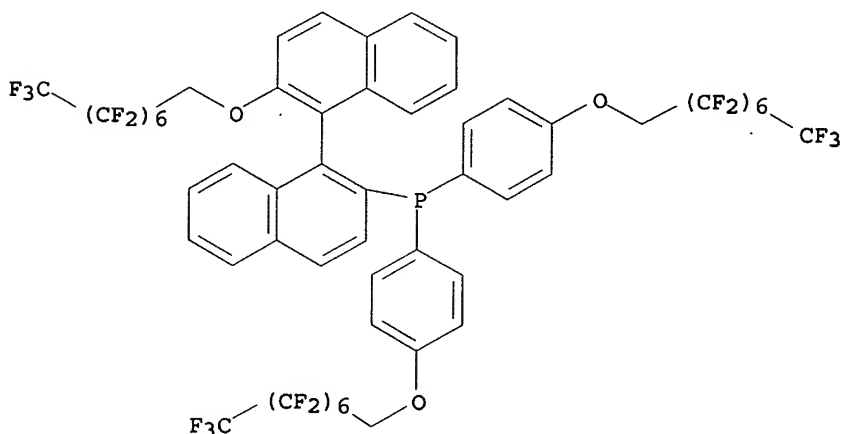
PREP (Preparation); USES (Uses)

(prepn. of chiral light fluorous phosphine

ligand for palladium-catalyzed asym. allylic alkylation)

RN 365240-77-3 HCAPLUS

CN Phosphine, [(1R)-2'-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl)oxy][1,1'-binaphthalen]-2-yl]bis[4-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl)oxy]phenyl]-(9CI) (CA INDEX NAME)



CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 25

IT 365240-77-3P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of chiral light fluorous phosphine

ligand for palladium-catalyzed asym. allylic alkylation)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 35 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

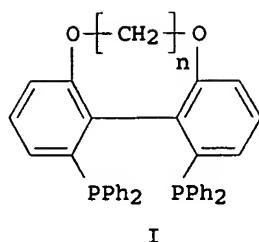
ACCESSION NUMBER: 2001:228894 HCAPLUS

DOCUMENT NUMBER: 134:266437

TITLE: Chiral phosphines, transition metal complexes

thereof and uses thereof in asymmetric reactions
 INVENTOR(S): Zhang, Xumu
 PATENT ASSIGNEE(S): Penn State Research Foundation, USA
 SOURCE: PCT Int. Appl., 52 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001021625	A1	20010329	WO 2000-US25635	20000919
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2385421	AA	20010329	CA 2000-2385421	20000919
EP 1214328	A1	20020619	EP 2000-965136	20000919
EP 1214328	B1	20060503		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
US 6521769	B1	20030218	US 2000-665456	20000919
JP 2003509513	T2	20030311	JP 2001-525000	20000919
PRIORITY APPLN. INFO.:				
			US 1999-154845P	P 19990920
			WO 2000-US25635	W 20000919
OTHER SOURCE(S):				
GI	CASREACT 134:266437; MARPAT 134:266437			



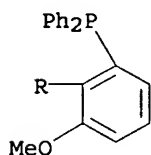
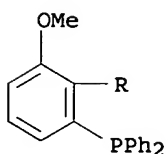
AB Chiral ligands and transition metal complexes based on such chiral ligands useful in asym. catalysis are disclosed. The chiral ligands include chiral C1-C6-TunaPhos ligands I (n = 1-6). The ruthenium TunaPhos complex reduces ketones to the corresponding alcs. with 95-99.6 % enantioselectivity. The transition metal complexes of the chiral ligands are useful in asym. reactions such as asym. hydrogenation, hydride transfer, hydrosilylation, hydroboration, hydrovinylation, hydroformylation, hydrocarboxylation, isomerization, allylic alkylation, cyclopropanation, Diels-Alder reaction, Heck reaction, isomerization, Aldol reaction, Michael addn. and epoxidn. reactions.

IT 133545-16-1P, (R)-MeO-BIPHEP

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(as free ligand and as dendrimer core; **prepn.**
as chiral **diphosphine** cocatalyst in **transition**
metal complex catalyzed asym. reactions and demethylation
of)

RN 133545-16-1 HCAPLUS

CN Phosphine, [(1R)-6,6'-dimethoxy[1,1'-biphenyl]-2,2'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)

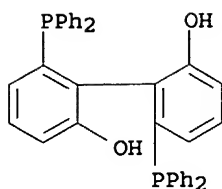


IT 151395-61-8P, (R)-HO-BIPHEP

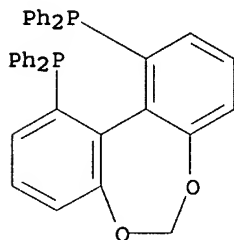
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and cyclization with organo dihalide)

RN 151395-61-8 HCAPLUS

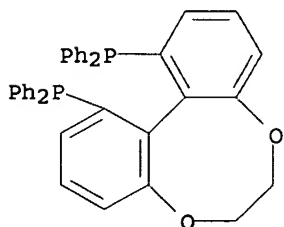
CN [1,1'-Biphenyl]-2,2'-diol, 6,6'-bis(diphenylphosphino)-, (1R)- (9CI)
(CA INDEX NAME)



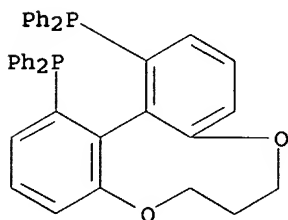
IT 301847-87-0P, (R)-C1-TunaPhos 301847-88-1P,
 (R)-C2-TunaPhos 301847-89-2P, (R)-C3-TunaPhos
 301847-90-5P, (R)-C4-TunaPhos 301847-91-6P,
 (R)-C5-TunaPhos 301847-92-7P, (R)-C6-TunaPhos
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. as cocatalyst in transition metal complex catalyzed asym.
 reactions)
 RN 301847-87-0 HCAPLUS
 CN Phosphine, (11aR)-dibenzo[d,f][1,3]dioxepin-1,11-diylbis[diphenyl-
 (9CI) (CA INDEX NAME)



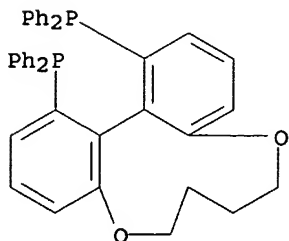
RN 301847-88-1 HCAPLUS
 CN Phosphine, [(12aR)-6,7-dihydrodibenzo[e,g][1,4]dioxocin-1,12-
 diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



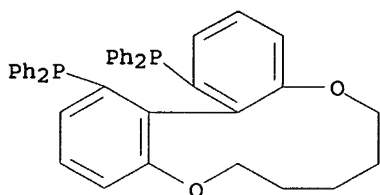
RN 301847-89-2 HCAPLUS
 CN Phosphine, [(13aR)-7,8-dihydro-6H-dibenzo[f,h][1,5]dioxonin-1,13-
 diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



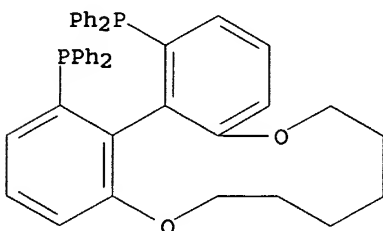
RN 301847-90-5 HCAPLUS
 CN Phosphine, [(14aR)-6,7,8,9-tetrahydrodibenzo[b,d][1,6]dioxecin-1,14-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



RN 301847-91-6 HCAPLUS
 CN Phosphine, [(15aR)-7,8,9,10-tetrahydro-6H-dibenzo[b,d][1,6]dioxacycloundecin-1,15-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



RN 301847-92-7 HCAPLUS
 CN Phosphine, [(16aR)-6,7,8,9,10,11-hexahydrodibenzo[b,d][1,6]dioxacyclododecin-1,16-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



IC ICM C07F009-02
 ICS C07F009-52; C07F015-00; B01J031-00
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 21, 35, 67
 IT Polyethers, preparation
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (dendrimers; prepn. of dendritic chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
 IT Dendritic polymers
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (polyethers; prepn. of dendritic chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
 IT Polyamides, uses

- Vanadyl complexes
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT Phosphines
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. of chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT Zeolites (synthetic), uses
 RL: CAT (Catalyst use); USES (Uses)
 (support; prepn. of chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT 133545-16-1P, (R)-MeO-BIPHEP
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (as free ligand and as dendrimer core; prepn. as chiral diphosphine cocatalyst in transition metal complex catalyzed asym. reactions and demethylation of)
- IT 331769-02-9
 RL: CAT (Catalyst use); USES (Uses)
 (as free ligand and as dendrimer core; prepn. of chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT 331768-93-5
 RL: CAT (Catalyst use); USES (Uses)
 (as free ligand and dendrimer core; prepn. of chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT 76189-55-4
 RL: CAT (Catalyst use); USES (Uses)
 (cocatalyst; chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT 331754-83-7D, Me ether-terminated
 RL: CAT (Catalyst use); USES (Uses)
 (dendrimers with (R)-((6,6'-diamino- or 6,6'-dihydroxybiphenyl-2,2'-diyl)bis(diphenylphosphine) as core; prepn. of chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT 129371-31-9D, Poly(3,5-dihydroxybenzyl alcohol), Me ether-terminated
 RL: CAT (Catalyst use); USES (Uses)
 (dendrimers with (R)-(6,6'-dihydroxy- or 6,6'-dicarboxybiphenyl-2,2'-diyl)bis(diphenylphosphine) as core; prepn. of chiral diphosphines as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT 151395-61-8P, (R)-HO-BIPHEP
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and cyclization with organo dihalide)
- IT 301847-87-0P, (R)-C1-TunaPhos 301847-88-1P, (R)-C2-TunaPhos 301847-89-2P, (R)-C3-TunaPhos 301847-90-5P, (R)-C4-TunaPhos 301847-91-6P, (R)-C5-TunaPhos 301847-92-7P, (R)-C6-TunaPhos
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. as cocatalyst in transition metal complex catalyzed asym. reactions)
- IT 546-68-9, Titanium(IV) isopropoxide 1295-35-8, Bis(cyclooctadiene)nickel 3153-26-2 3375-31-3, Palladium diacetate 10025-65-7, Platinum dichloride 12012-95-2, Bis[(η³-allyl)chloropalladium] 12082-47-2, Bis(ethylene)rhodium acetylacetonate 12092-47-6, Di-μ-chlorobis(cyclooctadiene)dirhodium 12112-67-3,

Dichlorobis(cyclooctadiene)diiridium 12289-94-0,
 (1,5-Cyclooctadiene)bis(2-methylallyl)ruthenium 14024-58-9,
 Manganese(II) acetylacetonate 14874-82-9, Dicarbonylrhodium
 acetylacetonate 15244-77-6, Dicarbonyldichlororhodium
 17524-05-9, Molybdenum dioxydiacetylacetonate 34946-82-2, Cupric
 triflate 37366-09-9, Bis[(η 6-benzene)dichlororuthenium]
 42152-44-3, Cuprous triflate 50982-12-2,
 Dichloro(cyclooctadiene)ruthenium 51364-51-3,
 Tris(dibenzylideneacetone)dipalladium 70197-13-6, Methylrhodium
 trioxide 331754-81-5 331754-82-6 331754-84-8 331768-59-3
 331768-60-6 331768-61-7 331768-62-8 331768-63-9 331768-64-0
 331768-65-1 331768-66-2 331768-67-3 331768-68-4 331768-69-5
 331768-70-8 331768-71-9 331768-72-0 331768-73-1 331768-74-2
 331768-75-3 331768-76-4 331768-77-5 331768-78-6 331768-80-0
 331768-82-2 331768-83-3 331768-84-4 331768-85-5 331768-86-6
 331768-87-7 331768-88-8 331768-89-9 331768-90-2 331768-91-3
 331768-92-4 331768-94-6 331768-95-7 331768-95-7D, reaction
 products with zeolites, silica, or mesoporous materials
 331768-96-8 331768-97-9 331768-98-0 331768-99-1 331769-00-7
 331769-01-8 331769-03-0 331769-04-1 331769-05-2 331769-06-3
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 331769-17-6 331769-18-7 331769-19-8 331769-20-1 331769-21-2
 331769-22-3 331769-23-4 331769-23-4D, reaction products with
 zeolites, silica, or mesoporous materials 331769-24-5
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 331769-35-8 331769-36-9 331769-37-0 331769-38-1 331769-39-2
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 331769-50-7 331769-51-8 331769-52-9 331769-53-0 331769-54-1
 331769-55-2 331769-56-3 331769-57-4 331769-58-5 331769-59-6
 331769-60-9 331769-61-0 331769-62-1 331769-63-2 331769-64-3
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 331769-85-8 331769-86-9 331769-87-0 331769-88-1
 331769-88-1D, reaction products with zeolites, silica, or mesoporous
 materials 331769-89-2 331769-89-2D, reaction products with
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 331769-92-7D, reaction products with zeolites, silica, or mesoporous
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 331769-95-0 331769-96-1 331769-97-2 331769-98-3
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 331770-00-4D, reaction products with zeolites, silica, or mesoporous
 materials 331770-01-5 331770-01-5D, reaction products with
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 331770-02-6D, reaction products with zeolites, silica, or mesoporous
 materials 331770-03-7 331770-03-7D, reaction products with
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 331770-05-9 331770-06-0 331770-07-1 331770-08-2 331770-09-3
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 331770-15-1 331770-16-2 331770-17-3 331770-18-4 331770-19-5
 331770-20-8 331776-92-2

RL: CAT (Catalyst use); USES (Uses)

(prepn. of chiral diphosphines as cocatalyst in transition metal
 complex catalyzed asym. reactions)

IT 7631-86-9, Silica, uses

RL: CAT (Catalyst use); USES (Uses)

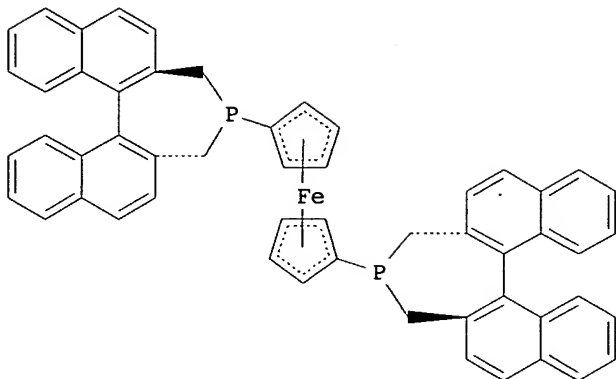
(support; prepn. of chiral diphosphines as cocatalyst in
transition metal complex catalyzed asym. reactions)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L26 ANSWER 36 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:152619 HCAPLUS
DOCUMENT NUMBER: 134:207966
TITLE: Chiral ligands, transition-metal complexes
thereof and uses thereof in asymmetric reactions
INVENTOR(S): Zhang, Xumu; Xiao, Dengming
PATENT ASSIGNEE(S): The Penn State Research Foundation, USA
SOURCE: PCT Int. Appl., 69 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001014299	A1	20010301	WO 2000-US22976	200008 22
<p>W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW</p> <p>RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG</p>				
CA 2382779	AA	20010301	CA 2000-2382779	200008 22
EP 1206427	A1	20020522	EP 2000-961346	200008 22
EP 1206427	B1	20051109		
<p>R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL</p>				
JP 2003507443	T2	20030225	JP 2001-518392	200008 22
US 6525210	B1	20030225	US 2000-643434	200008 22
AT 309186	E	20051115	AT 2000-961346	200008 22
US 2003163003	A1	20030828	US 2002-319093	200212 13
US 6828271	B2	20041207		
PRIORITY APPLN. INFO.:			US 1999-150375P	P 199908

23
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 US 1999-165649P P 199911
 15
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 US 2000-643434 A3 200008
 22
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 WO 2000-US22976 W 200008
 22
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OTHER SOURCE(S): CASREACT 134:207966; MARPAT 134:207966
 GI



I

AB Chiral ligands and transition metal complexes based on such chiral ligands useful in asym. catalysis are disclosed. The chiral ligands include phospholanes, P,N ligands, N,N ligands, biphenols, and chelating phosphines, e.g. I. The ferrocene-based iridium (R,R)-f-binaphane complex reduces imines to the corresponding amines with 95-99.6 % enantioselectivity and reduces β -substituted- α -arylenamides with 95 % enantioselectivity. The transition metal complexes of the chiral ligands are useful in asym. reactions such as asym. hydrogenation of imines, asym. hydride transfer reactions, hydrosilylation, hydroboration, hydrovinylation, hydroformylation, allylic alkylation, cyclopropanation, Diels-Alder reaction, Heck reaction, isomerization, Aldol reaction, Michael addn. and epoxidn. reactions.

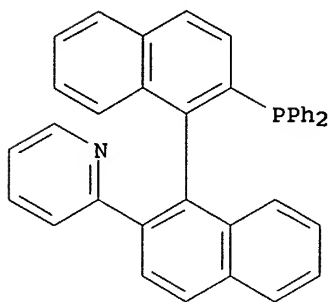
IT 328387-04-8P 328387-05-9P 328387-06-0P
 328387-07-1P 328387-08-2P 328387-09-3P
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 328387-13-9P 328387-14-0P 328387-34-4P
 328387-36-6P 328387-38-8P 328387-41-3P
 328387-43-5P 328387-44-6P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepn. of chiral diphosphine ligands
 and their transition-metal complexes as
 catalysts for asym. reactions)

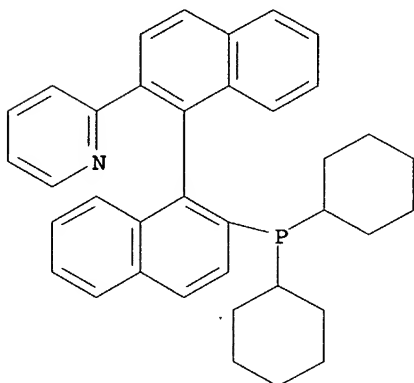
RN 328387-04-8 HCAPLUS

CN Pyridine, 2-[(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-
(9CI) (CA INDEX NAME)



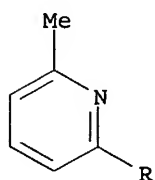
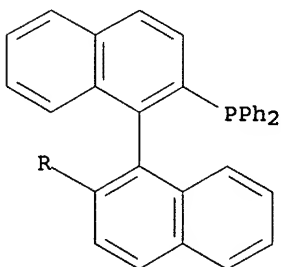
RN 328387-05-9 HCAPLUS

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(9CI) (CA INDEX NAME)

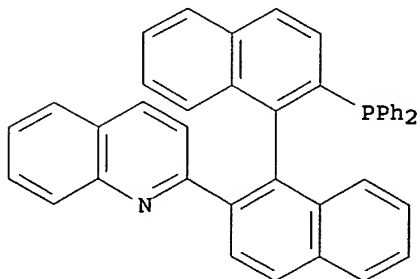


RN 328387-06-0 HCAPLUS

CN Pyridine, 2-[(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-6-
methyl- (9CI) (CA INDEX NAME)

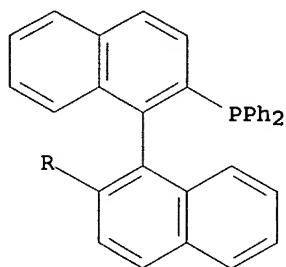


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CN Quinoline, 2-[(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]-
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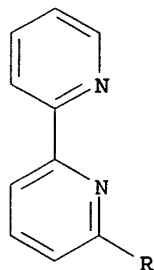


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CN 2,2'-Bipyridine, 6-[(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]- (9CI) (CA INDEX NAME)

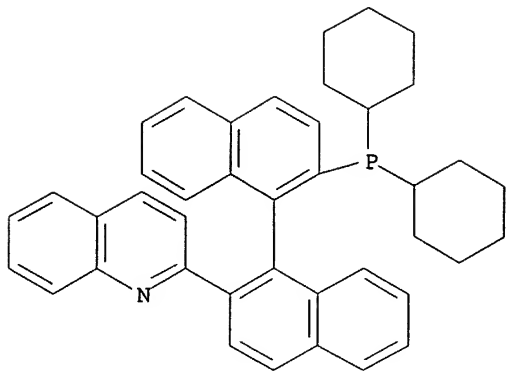
PAGE 1-A



PAGE 2-A

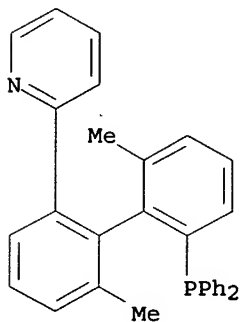


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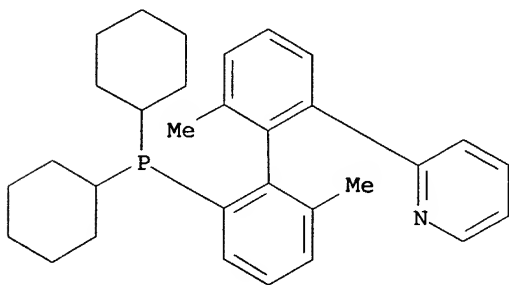
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CN Pyridine, 2-[(1R)-2'-(diphenylphosphino)-6,6'-dimethyl[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



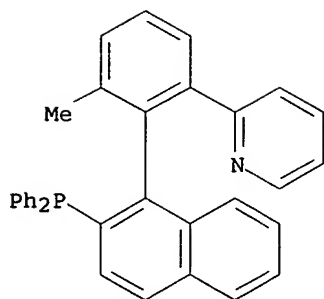
RN 328387-11-7 HCAPLUS

CN Pyridine, 2-[(1R)-2'-(dicyclohexylphosphino)-6,6'-dimethyl[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)

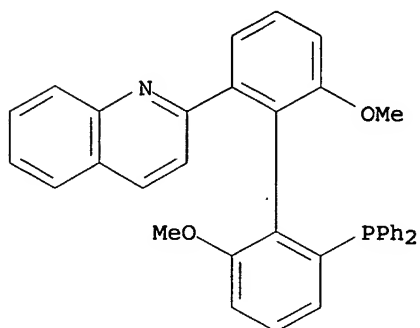


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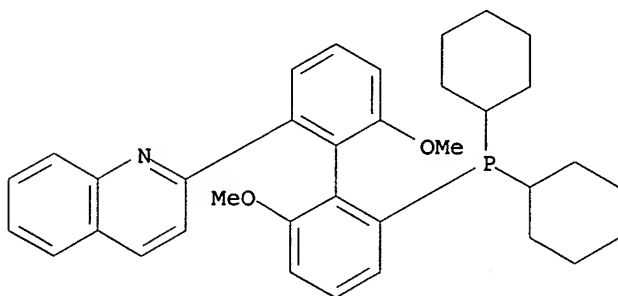
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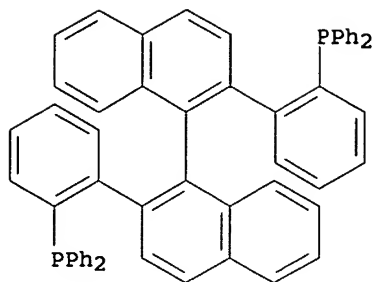
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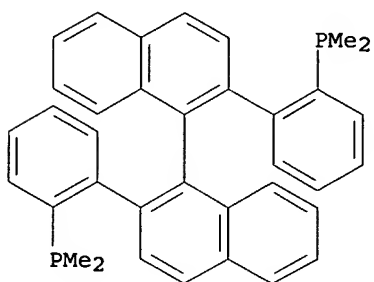
RN 328387-14-0 HCAPLUS
 CN Quinoline, 2-[(1R)-2'-(dicyclohexylphosphino)-6,6'-dimethoxy[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



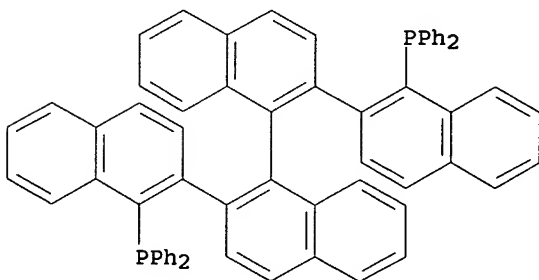
RN 328387-34-4 HCAPLUS
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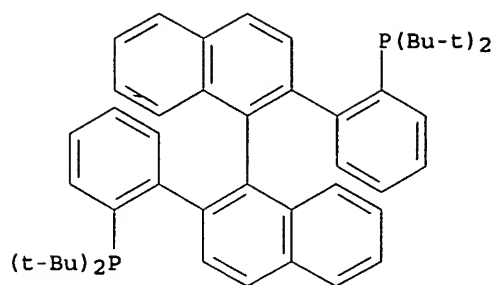
RN 328387-36-6 HCAPLUS
CN Phosphine, [(1R)-[1,1'-binaphthalene]-2,2'-diyl]-2,1-phenylene]bis(dimethyl- (9CI) (CA INDEX NAME)



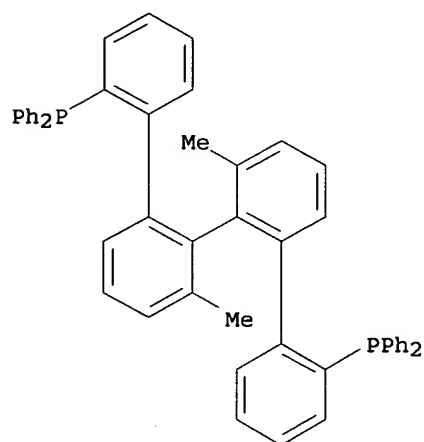
RN 328387-38-8 HCAPLUS
CN Phosphine, [(1'R)-[2,2':1',1'':2'',2'''-quaternaphthalene]-1,1'''-diyl]bis(diphenyl- (9CI) (CA INDEX NAME)



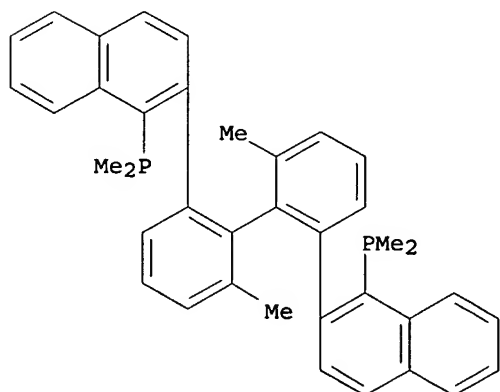
RN 328387-41-3 HCAPLUS
CN Phosphine, [(1R)-[1,1'-binaphthalene]-2,2'-diyl]-2,1-phenylene]bis[bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 328387-43-5 HCAPLUS
 CN Phosphine, [(1''R)-3',6''-dimethyl[1,1':2',1'':2'',1'''-
 quaterphenyl]-2,2'''-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



RN 328387-44-6 HCAPLUS
 CN Phosphine, 2,2'-[[(1R)-6,6'-dimethyl[1,1'-biphenyl]-2,2'-diyl]di-2,1-
 naphthalenediyl]bis[dimethyl- (9CI) (CA INDEX NAME)



IC ICM C07C039-205
 ICS C07C233-66; C07D213-04; C07F009-50; C07F009-58
 CC 29-7 (Organometallic and Organometalloidal
 Compounds)
 Section cross-reference(s): 25, 67, 78
 ST chiral diphosphine ligand transition

metal complex prepn asym catalysis; asym
hydrogenation chiral diphosphine transition
metal complex catalyst; phospholane ferrocene binaphane
transition metal complex prepn catalyst;
imine redn diphosphine transition metal
complex; enamide asym hydrogenation diphosphine
transition metal complex; iridium rhodium
diphosphine transition metal
prepn asym reaction catalyst

IT Arylation catalysts
(Heck; prepn. of chiral diphosphine
ligands and their transition-metal
complexes as catalysts for asym. reactions)

IT Alkylation catalysts
(allylic; prepn. of chiral diphosphine
ligands and their transition-metal
complexes as catalysts for asym. reactions)

IT Hydride transfer
(catalysts; prepn. of chiral diphosphine
ligands and their transition-metal
complexes as catalysts for asym. reactions)

IT Ligands
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic
preparation); PREP (Preparation); RACT (Reactant or reagent); USES
(Uses)
(chiral, diphosphines; prepn. of chiral
diphosphine ligands and their
transition-metal complexes as catalysts for
asym. reactions)

IT Hydrogen transfer catalysts
(hydride transfer catalysts; prepn. of chiral
diphosphine ligands and their
transition-metal complexes as catalysts for
asym. reactions)

IT Aldol condensation catalysts
Catalysts
Cyclopropanation catalysts
Diels-Alder reaction catalysts
Epoxidation catalysts
Hydroboration catalysts
Hydroformylation catalysts
Hydrosilylation catalysts
Isomerization catalysts
Michael reaction catalysts
(prepn. of chiral diphosphine ligands
and their transition-metal complexes as
catalysts for asym. reactions)

IT Transition metal complexes
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(prepn. of chiral diphosphine ligands
and their transition-metal complexes as
catalysts for asym. reactions)

IT Imines
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of chiral diphosphine ligands
and their transition-metal complexes as
catalysts for asym. reactions)

IT Hydrogenation catalysts
(stereoselective; prepn. of chiral diphosphine
ligands and their transition-metal
complexes as catalysts for asym. reactions)

IT Amides, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(unsatd.; prepn. of chiral diphosphine
ligands and their transition-metal

complexes as catalysts for asym. reactions)

IT 64-19-7, Acetic acid, uses 85-41-6, Phthalimide 100-46-9, Benzylamine, uses 311-28-4, Tetrabutylammonium iodide
 RL: CAT (Catalyst use); USES (Uses)
 (additive; binaphane iridium complex catalyzed enantioselective hydrogenation of imine in presence of)

IT 546-68-9, Titanium tetraisopropoxide 1295-35-8, Bis(1,5-Cyclooctadiene)nickel 3153-26-2, Vanadyl bis(acetylacetonate) 3375-31-3, Palladium diacetate 7439-96-5D, Manganese, anionic ligand derivs., uses 7440-02-0D, Nickel, anionic ligand derivs., uses 7440-18-8D, Ruthenium, complexes, uses 7440-50-8D, Copper, aryl and anionic ligand derivs., uses 10025-65-7, Platinum dichloride 12012-95-2, Bis(allyl(chloro)palladium) 12082-47-2, (Acetylacetonato)bis(ethylene)rhodium 12092-47-6, Bis(chloro(1,5-cyclooctadiene)rhodium) 12112-67-3, Bis(chloro(1,5-cyclooctadiene)iridium) 12289-94-0, (1,5-Cyclooctadiene)bis(2-methylallyl)ruthenium 14024-58-9, Bis(acetylacetonato)manganese 14874-82-9, (Acetylacetonato)dicarbonylrhodium 15244-77-6, Dicarbonyldichlororhodium 17524-05-9, Bis(acetoacetonato)dioxomolybdenum 34946-82-2, Cupric triflate 35015-47-5D, Bis(1,5-cyclooctadiene)rhodium(1+), salts 35464-26-7D, Bis(1,5-cyclooctadiene)iridium(1+), salts 42152-44-3, Cuprous triflate 51364-51-3, Tris(dibenzylideneacetone)dipalladium 56819-03-5, Dichloro(1,5-cyclooctadiene)rhodium 62793-31-1, Bis(1,5-cyclooctadiene)rhodium(1+) hexafluorophosphate 70197-13-6, Methylrhenium trioxide
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of chiral diphosphine ligands and their transition-metal complexes as catalysts for asym. reactions)

IT 253311-88-5P, (R,R)-Binaphane 288569-98-2P 328310-06-1P
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 328310-16-3P 328310-18-5P 328310-20-9P 328310-22-1P
 328386-97-6DP, esters 328386-98-7P 328386-99-8P 328387-00-4P
 328387-01-5P 328387-02-6P 328387-03-7P 328387-04-8P
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 328387-08-2P 328387-09-3P 328387-10-6P
 328387-11-7P 328387-12-8P 328387-13-9P
 328387-14-0P 328387-15-1P 328387-16-2P 328387-17-3P
 328387-18-4P 328387-19-5P 328387-20-8P 328387-21-9P
 328387-22-0P 328387-24-2P 328387-25-3P 328387-27-5P
 328387-28-6P 328387-30-0P 328387-32-2P 328387-34-4P
 328387-36-6P 328387-38-8P 328387-41-3P
 328387-43-5P 328387-44-6P 328387-46-8P
 328387-47-9P 328387-49-1P 328387-51-5P 328387-53-7P
 328387-55-9DP, esters 328395-00-2P
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. of chiral diphosphine ligands and their transition-metal complexes as catalysts for asym. reactions)

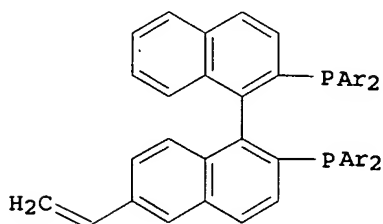
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 37 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:705090 HCAPLUS
 DOCUMENT NUMBER: 133:266977
 TITLE: Phosphine derivative and polymer thereof and transition metal complex comprising the same
 INVENTOR(S): Tamao, Kyoko; Sayo, Noboru
 PATENT ASSIGNEE(S): Takasago International Corp., Japan
 SOURCE: Eur. Pat. Appl., 23 pp.

DOCUMENT TYPE: CODEN: EPXXDW
 LANGUAGE: Patent
 FAMILY ACC. NUM. COUNT: 1 English
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1041077	A2	20001004	EP 2000-400848	200003 28
EP 1041077	A3	20020612		
EP 1041077	B1	20031105		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000281691	A2	20001010	JP 1999-88601	199903 30
US 6465594	B1	20021015	US 2000-539413	200003 30
PRIORITY APPLN. INFO.:			JP 1999-88601	A 199903 30

OTHER SOURCE(S): CASREACT 133:266977; MARPAT 133:266977
 GI



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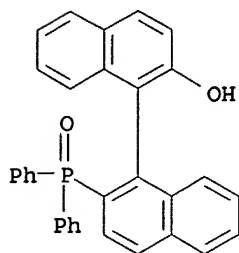
AB Disclosed are a **phosphine** deriv. I (Ar = (un)substituted Ph, (un)substituted naphthyl), a **transition metal** complex comprising the **phosphine** deriv. or a polymer thereof as a **ligand**, and a process for producing an optically active amino acid compd. by asym. hydrogenation using the **transition metal** complex as a catalyst. Thus, I (Ar = Ph) was **prepd.** in several steps starting from (R)-binaphthol, was copolymd. with styrene and divinylbenzene in a polyvinyl alc., chloroform, or a toluene soln. The polymer obtained above was reacted with di(1,5-cyclooctadiene)rhodium tetrafluoroborate to give a catalyst for asym. hydrogenation of Me (Z)- α -benzamidocinnamate.

IT 132548-91-5P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (prepn. and bromination of)

RN 132548-91-5 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-(diphenylphosphinyl)-, (1R)- (9CI) (CA

INDEX NAME)

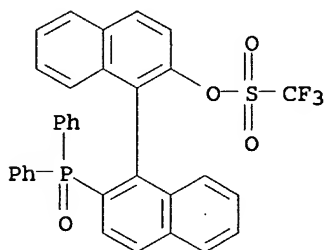


IT 132532-04-8P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(Preparation); RACT (Reactant or reagent)
 (prepn. and hydrolysis of)

RN 132532-04-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-((diphenylphosphino)oxy)-1,1'-binaphthalen-2-yl ester (9CI) (CA INDEX NAME)

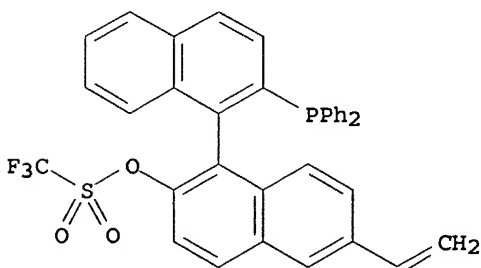


IT 298705-86-9P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(Preparation); RACT (Reactant or reagent)
 (prepn. and nickel-catalyzed phosphination of)

RN 298705-86-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, 2'-((diphenylphosphino)oxy)-6-ethenyl-1,1'-binaphthalen-2-yl ester, (1R)- (9CI) (CA INDEX NAME)



IT 298695-55-3P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(Preparation); RACT (Reactant or reagent)
 (prepn. and polymn. of)

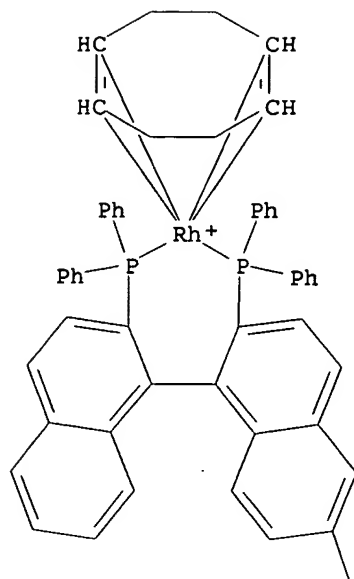
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CN Rhodium(1+), [[(1,2,5,6-η)-1,5-cyclooctadiene][[(1R)-6-ethenyl-1,1'-binaphthalen-2,2'-diyl]bis(diphenylphosphine-κP)]-], tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

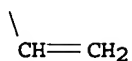
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CRN 298695-54-2
 CMF C54 H46 P2 Rh
 CCI CCS

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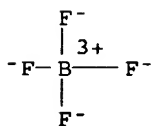


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CM 2

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 CCI CCS

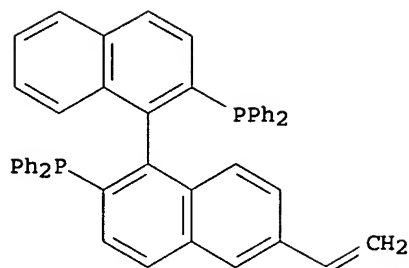


IT 298705-88-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. and polymn. with styrene and divinylbenzene)

RN 298705-88-1 HCAPLUS

CN Phosphine, [(1R)-6-ethenyl[1,1'-binaphthalene]-2,2'-
 diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



IT 298705-90-5P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(prepn. and reaction with rhodium cyclooctadiene complex)

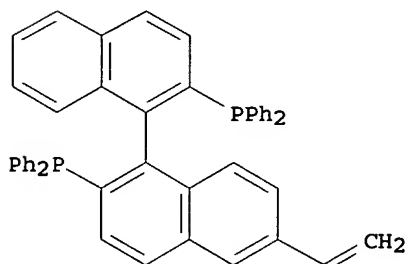
RN 298705-90-5 HCAPLUS

CN Phosphine, [(1R)-6-ethenyl[1,1'-binaphthalene]-2,2'-
diyl]bis[diphenyl-, polymer with ethenylbenzene (9CI) (CA INDEX
NAME)

CM 1

CRN 298705-88-1

CMF C46 H34 P2



CM 2

CRN 100-42-5

CMF C8 H8

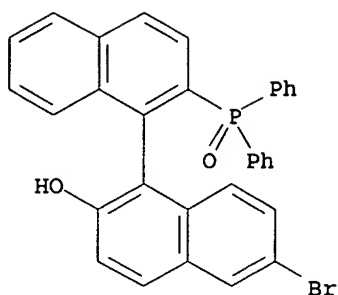
H₂C=CH-Ph

IT 213314-16-0P 298705-87-0P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(**Preparation**); RACT (Reactant or reagent)
(prepn. and redn. with trichlorosilane)

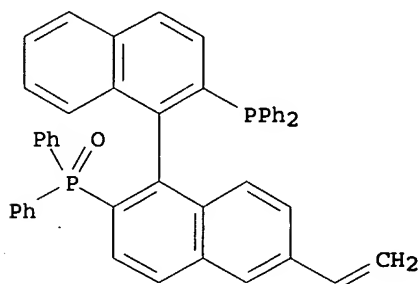
RN 213314-16-0 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 6-bromo-2'-(diphenylphosphinyl)-, (1R)-
(9CI) (CA INDEX NAME)



RN 298705-87-0 HCAPLUS

CN Phosphine oxide, [(1R)-2'-((diphenylphosphino)-6-ethenyl[1,1'-binaphthalen]-2-yl)diphenyl- (9CI) (CA INDEX NAME)

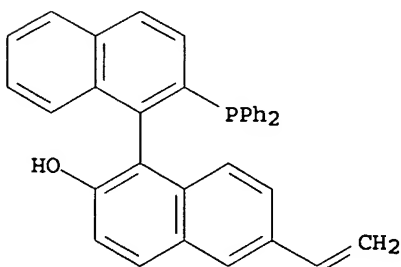


IT 213314-18-2P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(Preparation); RACT (Reactant or reagent)
(prepn. and triflation of)

RN 213314-18-2 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 2'-((diphenylphosphino)-6-ethenyl-, (1R)- (9CI) (CA INDEX NAME)

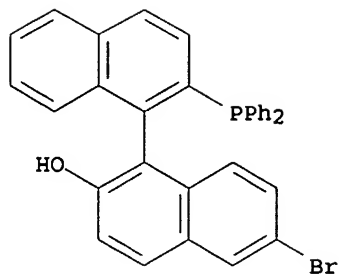


IT 213314-17-1P

RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
(Preparation); RACT (Reactant or reagent)
(prepn. and vinylation with vinylidioxaborinane)

RN 213314-17-1 HCAPLUS

CN [1,1'-Binaphthalen]-2-ol, 6-bromo-2'-((diphenylphosphino)-, (1R)- (9CI) (CA INDEX NAME)



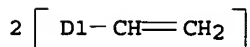
IT 298695-56-4P 298695-57-5P 298705-90-5DP,
 reaction products with bis(cyclooctadiene)rhodium tetrafluoroborate
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. as asym. hydrogenation catalyst for prepn. of optically
 active amino acid)
 RN 298695-56-4 HCAPLUS
 CN Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][[(1R)-6-
 ethenyl[1,1'-binaphthalene]-2,2'-diyl]bis[diphenylphosphine-
 κP]]-, tetrafluoroborate(1-), polymer with diethenylbenzene
 and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 1321-74-0

CMF C10 H10

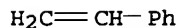
CCI IDS



CM 2

CRN 100-42-5

CMF C8 H8



CM 3

CRN 298695-55-3

CMF C54 H46 P2 Rh . B F4

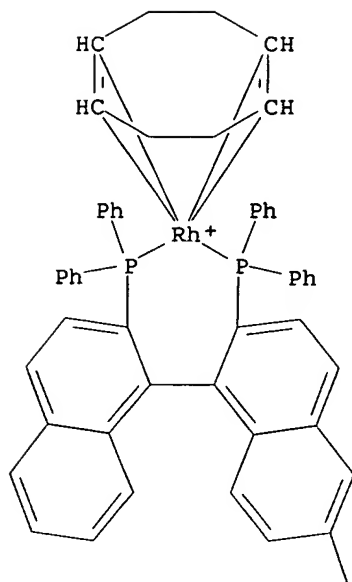
CM 4

CRN 298695-54-2

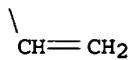
CMF C54 H46 P2 Rh

CCI CCS

PAGE 1-A



PAGE 2-A

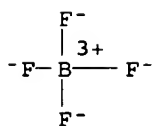


CM 5

CRN 14874-70-5

CMF B F4

CCI CCS

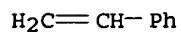


RN 298695-57-5 HCAPLUS
 CN Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][[(1R)-6-ethenyl[1,1'-binaphthalene]-2,2'-diyl]bis[diphenylphosphine-κP]]-, tetrafluoroborate(1-), polymer with ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5

CMF C8 H8



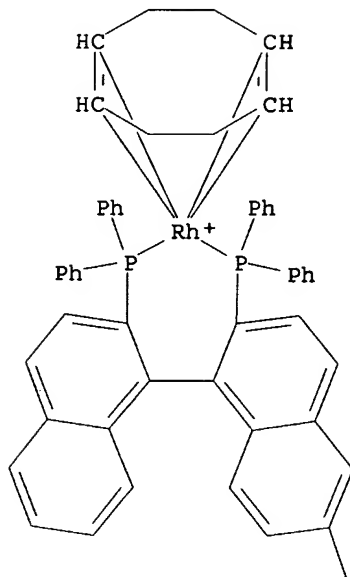
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CRN 298695-55-3
 CMF C54 H46 P2 Rh . B F4

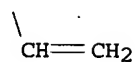
CM 3

CRN 298695-54-2
 CMF C54 H46 P2 Rh
 CCI CCS

PAGE 1-A

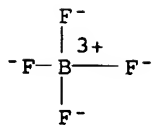


PAGE 2-A



CM 4

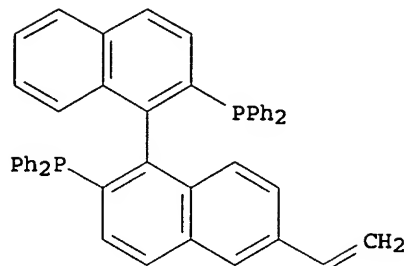
CRN 14874-70-5
 CMF B F4
 CCI CCS



RN 298705-90-5 HCAPLUS
 CN Phosphine, [(1R)-6-ethenyl[1,1'-binaphthalene]-2,2'-diyl]bis[diphenyl-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)]

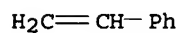
CM 1

CRN 298705-88-1
CMF C46 H34 P2



CM 2

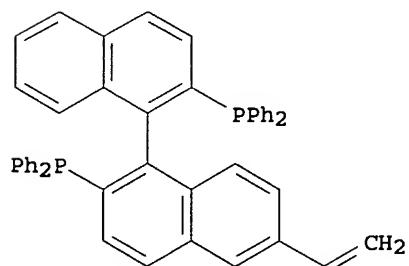
CRN 100-42-5
CMF C8 H8



IT 298705-89-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)
RN 298705-89-2 HCAPLUS
CN Phosphine, [(1R)-6-ethenyl[1,1'-binaphthalene]-2,2'-
diyl]bis[diphenyl-, polymer with diethenylbenzene and ethenylbenzene
(9CI) (CA INDEX NAME)

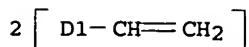
CM 1

CRN 298705-88-1
CMF C46 H34 P2



CM 2

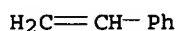
CRN 1321-74-0
CMF C10 H10
CCI IDS



CM 3

CRN 100-42-5

CMF C8 H8



IC ICM C07F009-50
ICS C07F015-00; C08F030-02; C08F030-04; C07B053-00
ICI C07M007-00
CC 29-13 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 25, 67
IT 6737-42-4, 1,3-Bis(diphenylphosphino)propane
RL: CAT (Catalyst use); USES (Uses)
(palladium catalyzed phosphination of triflated binaphthol in presence of)
IT 14647-23-5, Dichloro[1,2-bis(diphenylphosphino)ethane]nickel
RL: CAT (Catalyst use); USES (Uses)
(phosphination of triflated vinylphosphinobinaphthalene catalyzed with)
IT 132548-91-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and bromination of)
IT 132532-04-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and hydrolysis of)
IT 298705-86-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and nickel-catalyzed phosphination of)
IT 298695-55-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and polymn. of)
IT 298705-88-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and polymn. with styrene and divinylbenzene)
IT 298705-90-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction with rhodium cyclooctadiene complex)
IT 213314-16-0P 298705-87-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and redn. with trichlorosilane)
IT 213314-18-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and triflation of)

IT 213314-17-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and vinylation with vinylidioxaborinane)

IT 35138-22-8DP, Bis(cyclooctadiene)rhodium tetrafluoroborate, reaction products with (R)-6-vinyl-2,2'-bis(diphenylphosphino)-1,1'-binaphthalene-styrene copolymer 298695-56-4P
 298695-57-5P 298705-90-5DP, reaction products with bis(cyclooctadiene)rhodium tetrafluoroborate
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. as asym. hydrogenation catalyst for prepn. of optically active amino acid)

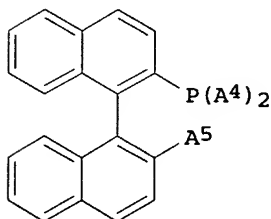
IT 298705-89-2P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of)

L26 ANSWER 38 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:658089 HCAPLUS
 DOCUMENT NUMBER: 133:237683
 TITLE: Preparation of optically active aromatic sulfonylamines
 INVENTOR(S): Hayashi, Tamio
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000256305	A2	20000919	JP 1999-63214	199903.10

PRIORITY APPLN. INFO.: JP 1999-63214
 199903.10

OTHER SOURCE(S): CASREACT 133:237683; MARPAT 133:237683
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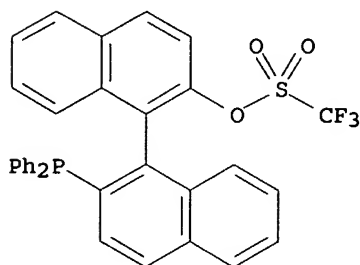


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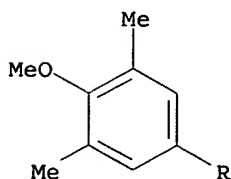
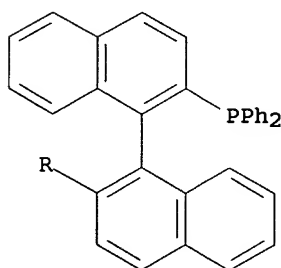
AB A1CA3NHSO2A2 [A1-A3 = (un)substituted alkyl, aralkyl, aryl] are prepd. by reaction of A1CH:NSO2A2 (A1-A2 = same as above) with A3SnR1R2R3 (A3 = same as above; R1-R3 = H, alkyl, alkoxy) in the presence of transition metal complex having optically active phosphines I [A4 = (un)substituted alkyl, aralkyl, aryl; A5 = (un)substituted alkyl, aralkyl, aryl, alkoxy] as ligands. 4-Nitro-N-(4-trifluoromethylbenzylidene)benzenesulfonamide was reacted with PhSnMe₃ in the presence of

2,4-pentanedionatobis(ethylene)rhodium(I) and (R)-2-(diphenylphosphino)-2'-(3,5-dimethyl-4-methoxy)-1,1'-binaphthyl at 110° for 12 h to give 70% [(4-nitrophenylsulfonyl)[phenyl[4-(trifluoromethyl)phenyl]methyl]amine with 96% e.e.

- IT 187742-81-0P, (R)-2-(Diphenylphosphino)-2'-[(trifluoromethanesulfonyl)oxy]-1,1'-binaphthyl
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (in prepn. of catalyst ligand; prepn. of optically active arom. sulfonylamines by addn. of benzyldieneamines with org. tin)
 RN 187742-81-0 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl (9CI) (CA INDEX NAME)

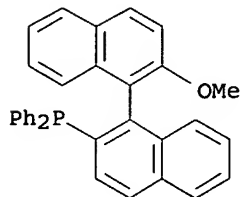


- IT 261773-75-5P, (R)-2-(Diphenylphosphino)-2'-(3,5-dimethyl-4-methoxyphenyl)-1,1'-binaphthyl
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (in prepn. of catalyst ligand; prepn. of optically active arom. sulfonylamines by addn. of benzyldieneamines with org. tin)
 RN 261773-75-5 HCAPLUS
 CN Phosphine, [(1R)-2'-(4-methoxy-3,5-dimethylphenyl)[1,1'-binaphthalen]-2-yl]diphenyl- (9CI) (CA INDEX NAME)



- IT 134484-36-9DP, (S)-2-(Diphenylphosphino)-2'-methoxy-1,1'-binaphthyl, rhodium complex
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. of optically active arom. sulfonylamines by addn. of benzyldieneamines with org. tin)

RN 134484-36-9 HCAPLUS
 CN Phosphine, [(1S)-2'-methoxy[1,1'-binaphthalen]-2-yl]diphenyl- (9CI)
 (CA INDEX NAME)



IC ICM C07C303-36
 ICS B01J031-24; C07B053-00; C07C311-21; C07F009-50; C07B061-00;
 C07M007-00
 CC 25-12 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
 IT 187742-81-0P, (R)-2-(Diphenylphosphino)-2'-
 [(trifluoromethanesulfonyl)oxy]-1,1'-binaphthyl
 RL: PNU (Preparation, unclassified); RCT (Reactant); **PREP**
 (Preparation); RACT (Reactant or reagent)
 (in prepn. of catalyst ligand; prepn. of optically active arom.
 sulfonylamines by addn. of benzylideneamines with org. tin)
 IT 261773-75-5P, (R)-2-(Diphenylphosphino)-2'-(3,5-dimethyl-4-
 methoxyphenyl)-1,1'-binaphthyl
 RL: RCT (Reactant); SPN (Synthetic preparation); **PREP**
 (Preparation); RACT (Reactant or reagent)
 (in prepn. of catalyst ligand; prepn. of optically active arom.
 sulfonylamines by addn. of benzylideneamines with org. tin)
 IT 134484-36-9DP, (S)-2-(Diphenylphosphino)-2'-methoxy-1,1'-
 binaphthyl, rhodium complex
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
 (prepn. of optically active arom. sulfonylamines by addn. of
 benzylideneamines with org. tin)

L26 ANSWER 39 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:592728 HCAPLUS

DOCUMENT NUMBER: 133:177311

TITLE: Preparation of chiral biphenyl- and
 binaphthyl-based diphosphines and use in
 asymmetric catalysis

INVENTOR(S): Lemaire, Marc; Ter Halle, Rob; Schulz,
 Emmanuelle; Spagnol, Michel

PATENT ASSIGNEE(S): Rhodia Chimie, Fr.; Centre National De La
 Recherche Scientifique (C.N.R.S.)

SOURCE: PCT Int. Appl., 58 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

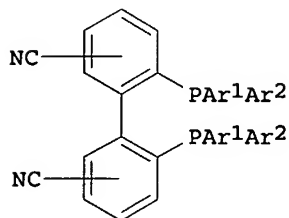
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WO 2000049028	A1	20000824	WO 2000-FR83	200001 14

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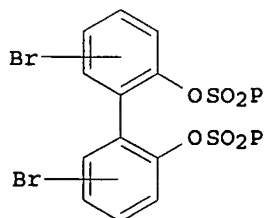
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 ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
 LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU,

SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN,
 YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
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 FR 2789992 A1 20000825 FR 1999-2119 199902
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OTHER SOURCE(S): CASREACT 133:177311; MARPAT 133:177311
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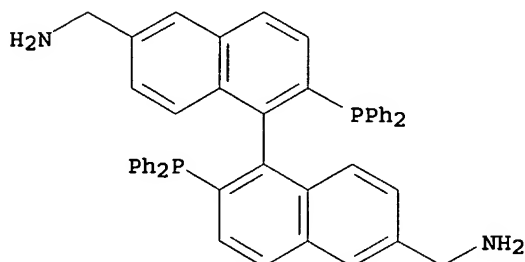


II

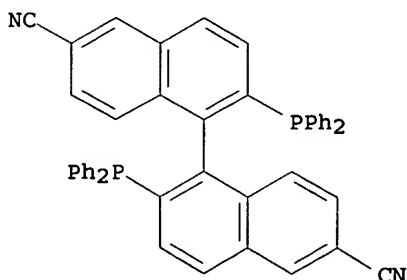
AB The invention concerns a method for prepg. I (optionally further substituted biphenyl may also be binaphthyl; Ar1, Ar2 independently represent a satd. or arom. carbocyclic group, optionally substituted). The prepn. method comprises several steps: (i) bromination of an enantiomer of 2,2'-bisphenol or 2,2'-binaphthol, (ii) esterification using a sulfonic acid or an activated form (e.g. triflic anhydride), (iii) substitution of Br by cyano, (iv) coupling with XPAR1Ar2 (X = H, halogen). The dicyano derivs. can be reduced to aminomethyl derivs. and both can be incorporated into transition metal complexes for asym. catalysis. For example, an hydrogenation

catalyst prep'd. from bis(2-methylallyl)(cyclooctadiene)ruthenium and (S)-6,6'-bis(aminomethyl)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl gave 100% Me 3-hydroxybutanoate from Me acetoacetate with an 100% ee. This catalyst system also is effective in the hydrogenation of acetophenone (72% yield with 18% ee compared to <1% yield and 0% ee for the analogous complex contg. a 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl enantiomer). The dicyano derivs. can also be converted to dicarboxy derivs. II (optionally further substituted biphenyl may also be binaphthyl; P = aliph. hydrocarbyl, carbocyclic aryl, aliph. group substituted by carbocyclic aryl; P neither CF₃ nor p-tolyl) are also claimed.

- IT 263163-80-0P, (S)-6,6'-Bis(aminomethyl)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. and ligand in transition metal complex asym. catalysts)
 RN 263163-80-0 HCAPLUS
 CN [1,1'-Binaphthalene]-6,6'-dimethanamine, 2,2'-bis(diphenylphosphino)-, (1S)- (9CI) (CA INDEX NAME)



- IT 263163-79-7P, (S)-6,6'-Dicyano-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn., cyano redn. and ligand in transition metal complex asym. catalysts)
 RN 263163-79-7 HCAPLUS
 CN [1,1'-Binaphthalene]-6,6'-dicarbonitrile, 2,2'-bis(diphenylphosphino)-, (1S)- (9CI) (CA INDEX NAME)



- IC ICM C07F009-50
 ICS B01J031-24; C07B053-00; C07C309-63
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 21, 67
 IT Phosphines
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES

(Uses)

(diphosphines; prepn. of chiral biphenyl- and binaphthyl-based diphosphines and use as ligands in transition metal complexes in asym. catalysis)

- IT Platinum-group metal complexes
 RL: CAT (Catalyst use); FMU (Formation, unclassified);
 FORM (Formation, nonpreparative); USES (Uses)
 (prepn. of chiral biphenyl- and binaphthyl-based diphosphines and use as ligands in transition metal complexes in asym. catalysis)
- IT Ketones, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of chiral biphenyl- and binaphthyl-based diphosphines and use as ligands in transition metal complexes in asym. hydrogenation of)
- IT Catalysts
 Hydrogenation catalysts
 (stereoselective; prepn. of chiral biphenyl- and binaphthyl-based diphosphines and use as ligands in transition metal complexes as)
- IT 7439-88-5D, Iridium, complexes with chiral diphosphinobiphenyl and -binaphthyl derivs., uses 7440-16-6D, Rhodium, complexes with chiral diphosphinobiphenyl and -binaphthyl derivs., uses
 RL: CAT (Catalyst use); FMU (Formation, unclassified);
 FORM (Formation, nonpreparative); USES (Uses)
 (formation and asym. catalysis by)
- IT 263163-80-0P, (S)-6,6'-Bis(aminomethyl)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. and ligand in transition metal complex asym. catalysts)
- IT 98-85-1P, 1-Phenylethanol 53562-86-0P, (S)-Methyl 3-hydroxybutanoate
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of chiral biphenyl- and binaphthyl-based diphosphines and use as ligands in transition metal complexes in asym. hydrogenation giving)
- IT 98-86-2, Acetophenone, reactions 105-45-3, Methyl acetoacetate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of chiral biphenyl- and binaphthyl-based diphosphines and use as ligands in transition metal complexes in asym. hydrogenation of)
- IT 263163-79-7P, (S)-6,6'-Dicyano-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn., cyano redn. and ligand in transition metal complex asym. catalysts)
- IT 12289-94-0, (1,5-Cyclooctadiene)bis(2-methylallyl)ruthenium
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (reactions with chiral diphosphinobinaphthyl derivs. for prepn. of asym. catalysts)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L26 ANSWER 40 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:446878 HCAPLUS

DOCUMENT NUMBER: 133:237383
 TITLE: Synthesis and evaluation of a new steroidal
 BINAP type phosphine
 AUTHOR(S): Enev, V.; Harre, M.; Nickisch, K.; Schneider,
 M.; Mohr, J. T.
 CORPORATE SOURCE: Process Research, Schering AG-Berlin, Berlin,
 D-13342, Germany
 SOURCE: Tetrahedron: Asymmetry (2000), 11(8),
 1767-1779
 CODEN: TASYE3; ISSN: 0957-4166
 PUBLISHER: Elsevier Science Ltd.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

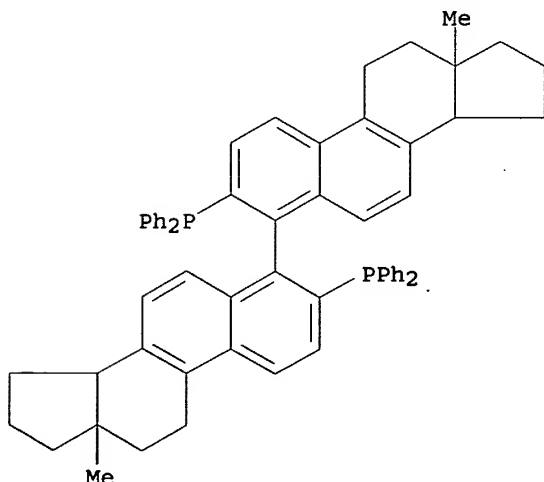
AB A short and high-yielding synthesis of a new cis-configured
 bissteroidal phosphine was reported. The target ligands were
 (-)-(4S,14 α)-(14' β)-[4,4'-biestra-1,3,5,7,9-pentaene]-
 3,3'-diylbis[diphenylphosphine] and (+)-(4R,14 α)-(14' β)-
 [4,4'-biestra-1,3,5,7,9-pentaene]-3,3'-diylbis[diphenylphosphine].
 These new ligands were compared to previously reported
 trans-configured ligands (4R,14 β)-(14' β)-[4,4'-biestra-
 1,3,5,7,9-pentaene]-3,3'-diylbis[diphenylphosphine] and
 (4S,14 β)-(14' β)-[4,4'-biestra-1,3,5,7,9-pentaene]-3,3'-
 diylbis[diphenylphosphine]. A comparison of these new phosphines as
 ligands for ruthenium-based hydrogenation catalysts with the
 previously synthesized diastereomeric trans-configured phosphines
 showed that the steroid backbone exerts only a minor influence on
 the enantioselection of the ruthenium catalysts and confirms that
 the bissteroidal phosphines behave as "pseudo"-enantiomers in spite
 of their diastereomeric nature. Evidence is presented that the mode
 of catalyst prepn., i.e. catalyst structure, is the crucial reaction
 parameter which mainly detes. the enantiomeric excess of the
 hydrogenation products.

IT 246254-75-1P, (+)-(4R,14 α)-(14' β)-[4,4'-Biestra-
 1,3,5,7,9-pentaene]-3,3'-diylbis[diphenylphosphine]
 246254-94-4P, (-)-(4S,14 α)-(14' β)-[4,4'-Biestra-
 1,3,5,7,9-pentaene]-3,3'-diylbis[diphenylphosphine]
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic
 preparation); PREP (Preparation); RACT (Reactant or
 reagent); USES (Uses)

(prepn. and evaluation of steroidal BINAP type
 phosphine ligands)

RN 246254-75-1 HCAPLUS

CN Phosphine, (4R,14 β)-(14' β)-[4,4'-biestra-1,3,5,7,9-
 pentaene]-3,3'-diylbis[diphenyl- (9CI) (CA INDEX NAME)



RN	246254-94-4	HCAPLUS
CN	Phosphine, (4S,14β)-(14'β)-[4,4'-biestra-1,3,5,7,9-pentaene]-3,3'-diylbis[diphenyl- (9CI) (CA INDEX NAME)]	

RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. and evaluation of steroidal BINAP type
 phosphine ligands)

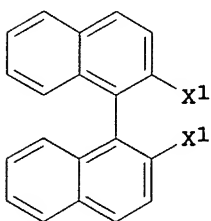
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L26 ANSWER 41 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:316969 HCAPLUS
 DOCUMENT NUMBER: 132:334625
 TITLE: Preparation of phosphinobinaphthyls from
 binaphthols and phosphines
 INVENTOR(S): Kawada, Mitsuru; Yamano, Toru; Yamashita,
 Masayuki
 PATENT ASSIGNEE(S): Takeda Chemical Industries, Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000136194	A2	20000516	JP 1999-235553	199908 23

PRIORITY APPLN. INFO.: JP 1998-238473 A 199808
 25

OTHER SOURCE(S): CASREACT 132:334625; MARPAT 132:334625
 GI

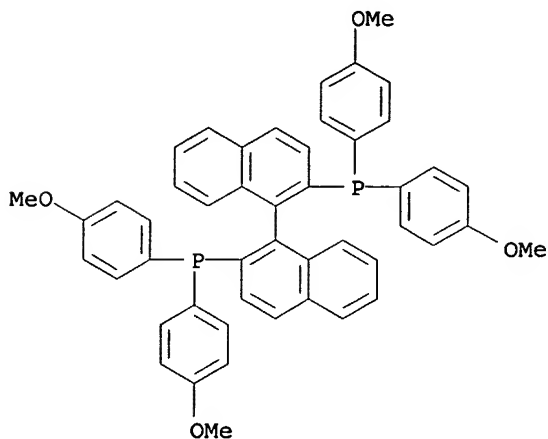


AB Title compds. I (X1, X2 = PAR₂; Ar = substituted Ph), useful as
 ligands for transition metal catalysts
 for asym. synthesis, are prepd. by reaction of I
 [X1= OR₁; X2 = OR₂; R₁, R₂ = (substituted) alkyl, arylsulfonyl] with
 substituted diphenylphosphines in the presence of amines
 and transition metals. (S)-2,2'-
 bis(trifluoromethanesulfonyloxy)-1,1'-binaphthyl (prepn.
 given) was condensed with bis(3,5-dimethylphenyl)phosphine
 (prepn. given) in the presence of [1,2-
 bis(diphenylphosphino)ethane] (dichloro)nickel and
 1,4-diazabicyclo[2,2,2]octane in DMF at 100° to give 53.8%
 (S)-I [X1 = X2 = P(C₆H₃Me₂-3,5)2].
 IT 121457-43-0P 123362-62-9P 135139-00-3P
 137219-86-4P
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);
 PREP (Preparation)

(prepn. of phosphinobinaphthyls from binaphthols and phosphines)

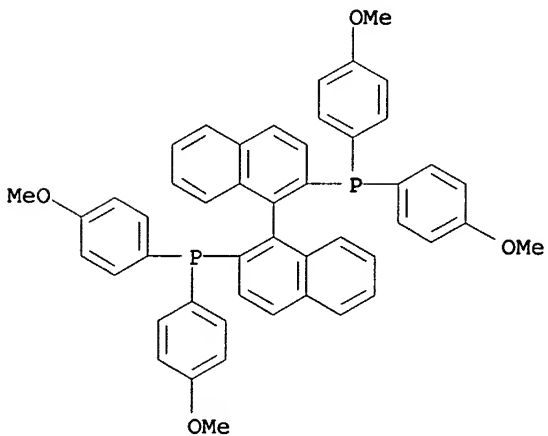
RN 121457-43-0 HCAPLUS

CN Phosphine, (1R)-[1,1'-binaphthalene]-2,2'-diylbis[bis(4-methoxyphenyl)]- (9CI) (CA INDEX NAME)



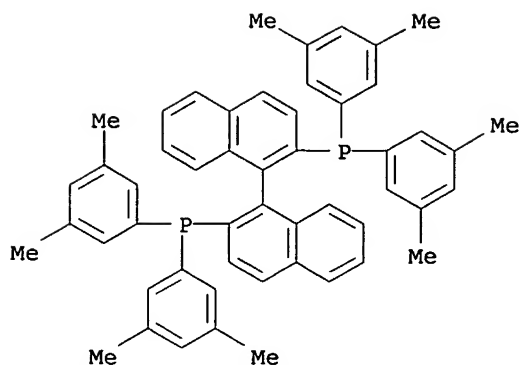
RN 123362-62-9 HCAPLUS

CN Phosphine, (1S)-[1,1'-binaphthalene]-2,2'-diylbis[bis(4-methoxyphenyl)]- (9CI) (CA INDEX NAME)

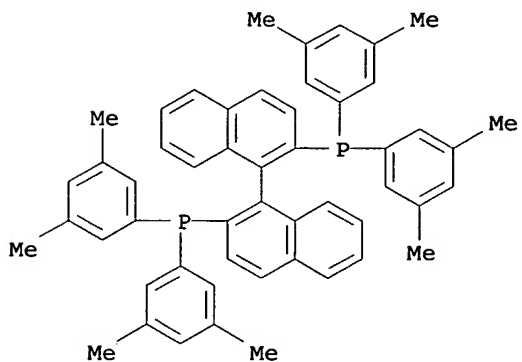


RN 135139-00-3 HCAPLUS

CN Phosphine, [(1S)-[1,1'-binaphthalene]-2,2'-diyl]bis[bis(3,5-dimethylphenyl)]- (9CI) (CA INDEX NAME)



RN 137219-86-4 HCAPLUS
 CN Phosphine, (1R)-[1,1'-binaphthalene]-2,2'-diylbis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)]



IC ICM C07F009-50
 ICS B01J031-24; C07B053-00; C07B061-00; C07M007-00
 CC 29-7 (Organometallic and Organometalloidal Compounds)
 IT Amines, uses
 Transition metals, uses
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts; prepn. of phosphinobinaphthyls from binaphthols and phosphines)
 IT 280-57-9, 1,4-Diazabicyclo[2.2.2]octane 14647-23-5,
 1,2-Bis(diphenylphosphino)ethane]dichloronickel
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst; prepn. of phosphinobinaphthyls from binaphthols and phosphines)
 IT 121457-43-0P 123362-62-9P 135139-00-3P
 137219-86-4P
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);
 PREP (Preparation)
 (prepn. of phosphinobinaphthyls from binaphthols and phosphines)

L26 ANSWER 42 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:197485 HCAPLUS

DOCUMENT NUMBER: 132:237203

TITLE: Chemical processes using aryl diphosphine containing catalysts

INVENTOR(S): Kohlpaintner, Christian W.; Hanson, Brian E.;
 Ding, Hao

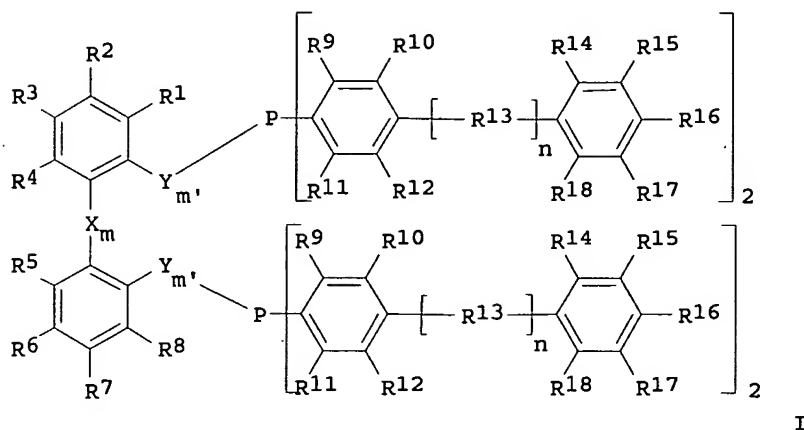
PATENT ASSIGNEE(S): Celanese International Corporation, USA;
 Virginia Poly-Technic Inc.

SOURCE: U.S., 14 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6043398	A	20000328	US 1996-634533	19960418

PRIORITY APPLN. INFO.: <--
 US 1996-634533
 19960418

OTHER SOURCE(S): <--
 CASREACT 132:237203; MARPAT 132:237203
 GI



AB Water-sol. **diphosphines I** [X, Y = C1-20 alkyl, alkenyl or alkynyl, Ph, naphthyl, NR, O, S; R = H, C1-20 alkyl, Ph; m, m' = 0, 1; R1-R8 = H, halo, NO₂, amino, C1-20 alkyl, alkoxy, OH, CO₂R, CN, SO₃M (M = alkali or alk. earth metal), N+R₃X⁻ (X⁻ = halide), aryl; R1 and R2, R2 and R3, R3 and R4, R5 and R6, R6 and R7, R7 and R8 may also form an (un)substituted ring contg. 2-6 C, O, N and/or S atoms or their mixts.; R9-R12 and R14-R18 = H, halo, SO₃M, N+R₄, C1-20 alkyl, CO₂M, N+R₃X⁻, CN, OR, CO₂R, PR₂, same R; R13 = (un)branched C1-20 alkyl, alkenyl or alkynyl, (un)substituted Ph, naphthyl or anthryl; n = 0-20; at least one of R1-R12 and R14-R18 = SO₃M] complexed with a **transition metal** (selected from Mn, Co, Ni, Cr, Fe, Re, Ru, Rh, Tc, Pd, Pt, Os, Cu, Cd, In, W, Mo, Hg, Au, Ag) having 0-7 ligands L (L = CO, NO, PF₃, H₂O, S, halo, PF₆, CN, hydrides, BF₄, arenes, olefins, acetylenes, phosphines) to form a novel catalyst, useful in hydroformylation of (un)substituted olefins or asym. hydrogenation, etc., are claimed. In an example, two-phase hydroformylation of 1-octene with 210 psi CO/H₂ in presence of a rhodium catalyst formed from Rh(acac)(CO)₂ and tetrasodium 2,2'-bis[bis(p-(3-p-sulfonatophenyl)propyl)phenyl]phosphinomethyl-1,1'-biphenyl (prepn. given) gave a 74% yield of C₉ aldehydes having a 93% selectivity for 1-nonanal, in contrast to 58% yield/74% selectivity when TPPTS [P(C₆H₄SO₃Na-m)₃] was used.

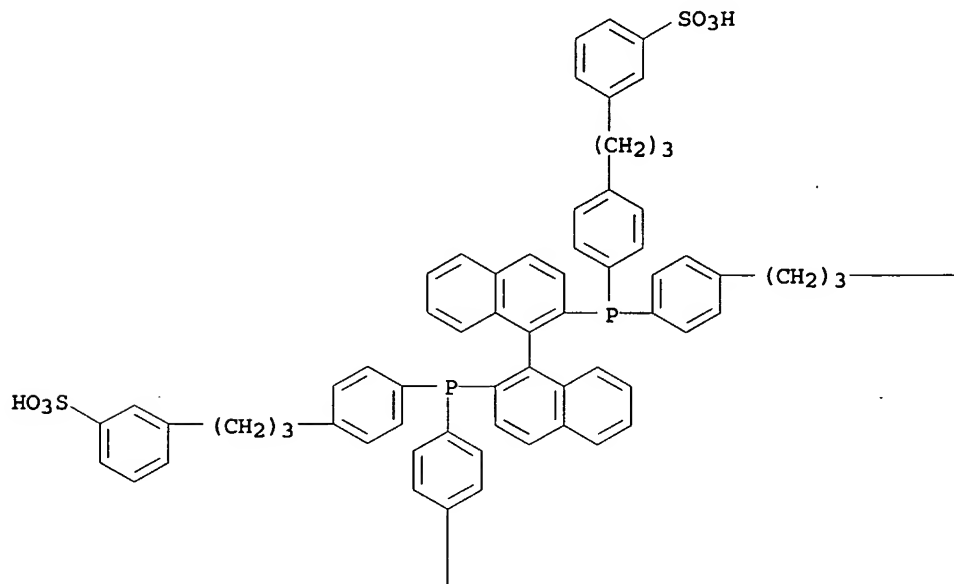
IT 261961-72-2P 261961-75-5P 261969-19-1P

RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of aryl diphosphines as
ligands for transition metal
catalysts)

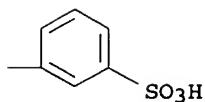
RN 261961-72-2 HCAPLUS

CN Benzenesulfonic acid, 3,3',3'',3'''-[[[1,1'-binaphthalene]-2,2'-
diylbis[phosphinidynebis(4,1-phenylene-3,1-propanediyl)]]tetrakis-,
tetrasodium salt (9CI) (CA INDEX NAME)

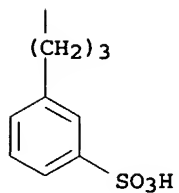
PAGE 1-A



PAGE 1-B



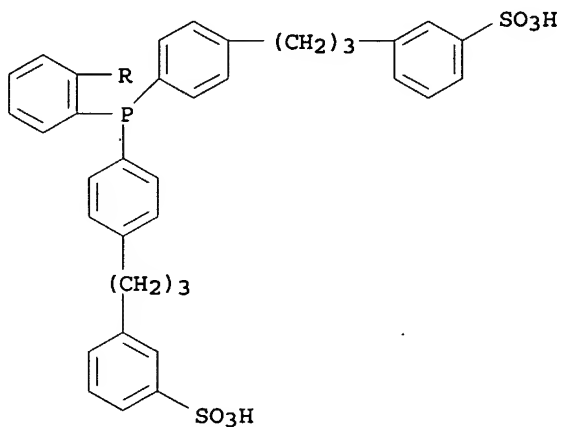
PAGE 2-A



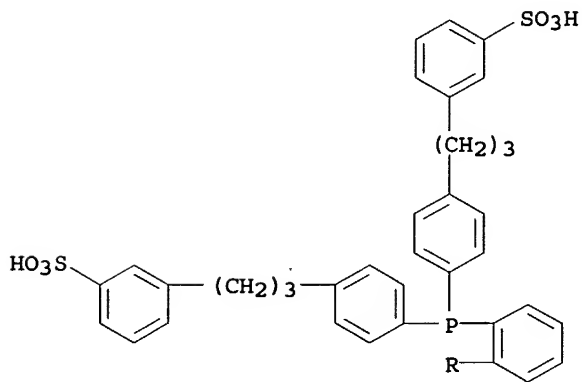
●4 Na

RN 261961-75-5 HCAPLUS
 CN Benzenesulfonic acid, 3,3',3'',3'''-[[[1,1'-biphenyl]-2,2'-diylbis[phosphinidynebis(4,1-phenylene-3,1-propanediyl)]]tetrakis-, tetrasodium salt (9CI) (CA INDEX NAME)

PAGE 1-A



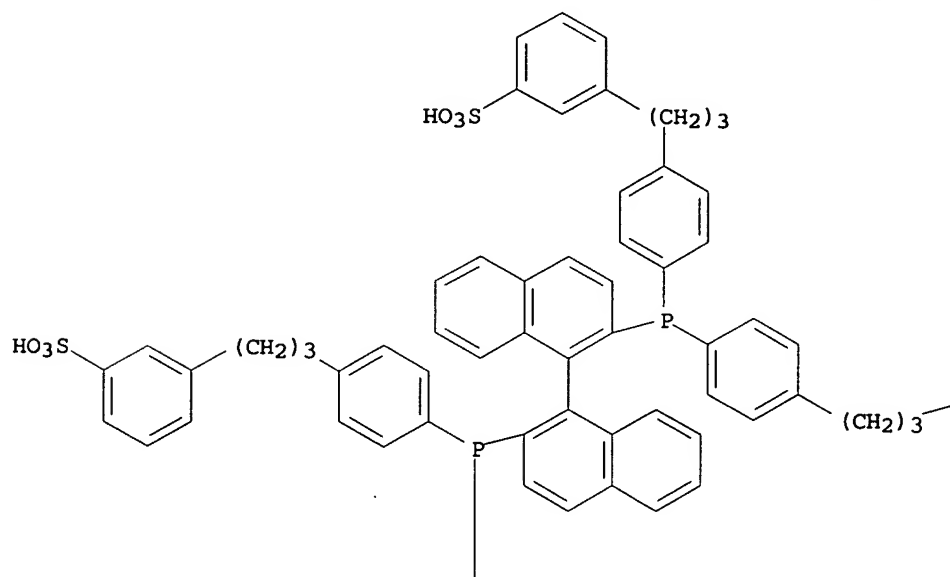
PAGE 2-A



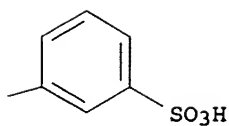
●4 Na

RN 261969-19-1 HCAPLUS
CN Benzenesulfonic acid, 3,3',3'',3'''-[(1R)-[1,1'-binaphthalene]-2,2'-diylbis[phosphinidynebis(4,1-phenylene-3,1-propanediyl)]]tetrakis-, tetrasodium salt (9CI) (CA INDEX NAME)

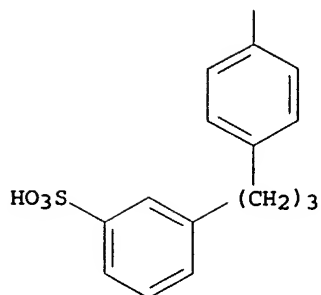
PAGE 1-A



PAGE 1-B



PAGE 2-A



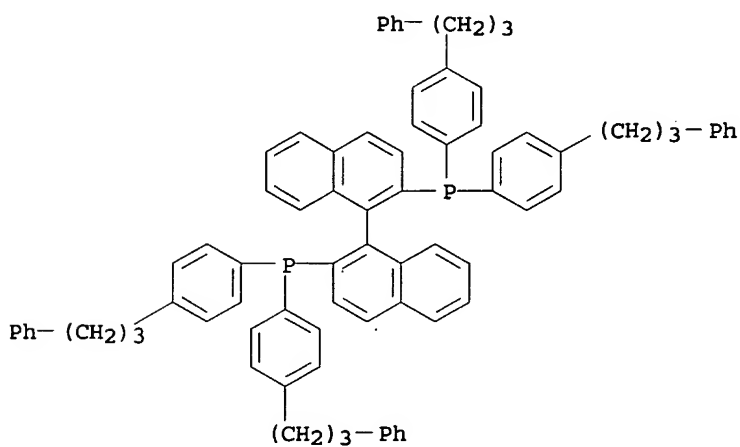
●4 Na

IT 196309-34-9P 261961-74-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (sulfonation; prepn. of aryl diphosphines as
 ligands for transition metal
 catalysts)

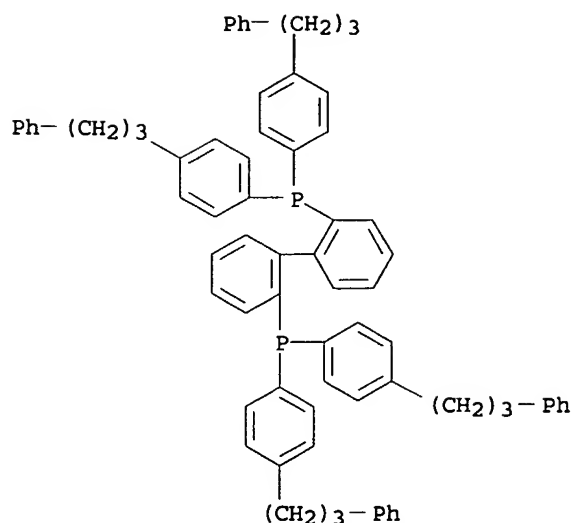
RN 196309-34-9 HCAPLUS

CN Phosphine, [1,1'-binaphthalene]-2,2'-diylbis[bis[4-(3-
 phenylpropyl)phenyl]- (9CI) (CA INDEX NAME)



RN 261961-74-4 HCAPLUS

CN Phosphine, [1,1'-biphenyl]-2,2'-diylbis[bis[4-(3-
 phenylpropyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM C07C047-02

INCL 568454000

CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 23, 25, 67, 78

IT Transition metal complexes

RL: CAT (Catalyst use); FMU (Formation, unclassified);

FORM (Formation, nonpreparative); USES (Uses)

(aryl diphosphine; formation of transition metal complexes of aryl diphosphines in situ as hydroformylation and asym. hydrogenation catalysts)

IT Phosphines

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(diphosphines; prepn. of aryl

diphosphines as ligands for transition

metal hydroformylation and hydrogenation catalysts)

IT 12092-47-6, Chloro(1,5-cyclooctadiene)rhodium dimer

RL: CAT (Catalyst use); USES (Uses)

(asym. hydrogenation of unsatd. compds. in presence of aryl diphosphine transition metal catalysts)

IT 14874-82-9, (Acetylacetonato)rhodium dicarbonyl

RL: CAT (Catalyst use); USES (Uses)

(hydroformylation of olefins in presence of aryl diphosphine transition metal catalysts)

IT 198490-82-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(lithiation and redn.; prepn. of aryl

diphosphines as ligands for transition

metal catalysts)

IT 196309-32-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);

RACT (Reactant or reagent)

(lithiation of; prepn. of aryl diphosphines

as ligands for transition metal

catalysts)

IT 14647-23-5

RL: CAT (Catalyst use); USES (Uses)

(phosphinylation of binaphthalene compd.)

IT 38274-14-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(phosphinylation; prepn. of aryl diphosphines

as ligands for transition metal

catalysts)
 IT 261961-72-2P 261961-75-5P 261969-19-1P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of aryl diphosphines as
 ligands for transition metal
 catalysts)
 IT 196309-34-9P 261961-74-4P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (sulfonation; prepn. of aryl diphosphines as
 ligands for transition metal
 catalysts)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L26 ANSWER 43 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:53646 HCAPLUS

DOCUMENT NUMBER: 132:108101

TITLE: Biaryl phosphine and amine ligands for improved
 transition metal-catalyzed processes

INVENTOR(S): Buchwald, Stephen; Old, David W.; Wolfe, John
 P.; Palucki, Michael; Kamikawa, Ken; Chieffi,
 Andrew; Sadighi, Joseph P.; Singer, Robert A.;
 Ahman, Jens

PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA

SOURCE: PCT Int. Appl., 397 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 5

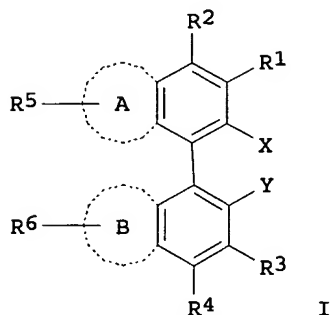
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000002887	A2	20000120	WO 1999-US15450	19990709
WO 2000002887	A3	20000629		
W: CA, JP				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 6395916	B1	20020528	US 1998-113478	19980710
US 6307087	B1	20011023	US 1999-231315	19990113
US 6867310	B1	20050315	US 1999-239024	19990127
CA 2336691	AA	20000120	CA 1999-2336691	19990709
EP 1097158	A2	20010509	EP 1999-933785	19990709
EP 1097158	B1	20060125		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, FI, CY
 JP 2002520328 T2 20020709 JP 2000-559117

			199907 09
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PRIORITY APPLN. INFO.:	US 1998-113478	A	199807 10
	<--		
	US 1998-196855	A	199811 20
	<--		
	US 1999-231315	A	199901 13
	<--		
	US 1999-239024	A	199901 27
	<--		
	US 1997-65970P	P	199711 20
	<--		
	WO 1999-US15450	W	199907 09

OTHER SOURCE(S): MARPAT 132:108101
 GI



AB The present invention relates to the **prepn.** of novel biaryl **phosphine** and amine **ligands** (I) [wherein A and B = independently fused monocyclic or polycyclic cycloalkyl, cycloalkenyl, aryl, or heterocyclic rings of 4-8 atoms; X = NR₂, PR₂, AsR₂, OR, or SR; Y = NR₂, PR₂, AsR₂, OR, SR, SiR₃, alkyl, or H; R-R₆ = independently H, halogen, (hetero)alkyl, alkenyl, alkynyl, hydroxy, alkoxy, silyloxy, amino, nitro, sulfhydryl, amide, carbonyl, ketone, anhydride, silyl, thioalkyl, ketone, ester, nitrile, (hetero)aryl, etc.] for **transition metals** and their use in **metal-catalyzed carbon-heteroatom and carbon-carbon bond-forming reactions**. Unexpected improvements over the prior art were demonstrated in **transition metal-catalyzed aryl amination reactions**, Suzuki couplings giving both biaryl and alkylaryl products, arylations and vinylations at the position α to carbonyl groups, and carbon-oxygen bond formation. The **ligands** and methods of the invention enable transformations utilizing aryl chlorides and

bromides at room temp. at synthetically useful rates with extremely small amts. of catalyst relative to the limiting reagent. For example, coupling of p-chlorobenzonitrile and morpholine was catalyzed by 2.5 mol% Pd2(dba)3, 7.5 mol% of 2-(N,N-dimethylamino)-2'-(dicyclohexylphosphino)biphenyl, and NaOBu-t in DME at room temp. to provide 4-(4-morpholinyl)benzonitrile in 96% yield. Thus, the subject processes provide improvements in many features of the transition metal-catalyzed reactions, including the range of suitable substrates, reaction conditions, and efficiency.

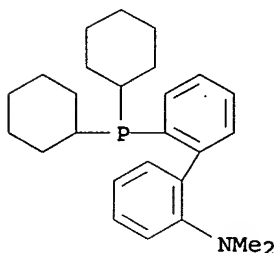
IT 213697-53-1P

RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(prepd. catalyst; prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)

RN 213697-53-1 HCAPLUS

CN [1,1'-Biphenyl]-2-amine, 2'-(dicyclohexylphosphino)-N,N-dimethyl- (9CI) (CA INDEX NAME)



IT 224311-51-7P, 2-(Di-tert-butylphosphino)biphenyl

224311-52-8P 224311-54-0P 224311-55-1P

251320-85-1P, 2-(Dicyclohexylphosphino)-2'-isopropylbiphenyl

251320-86-2P, 2-(Dicyclohexylphosphino)-2'-methylbiphenyl

255835-81-5P 255835-82-6P 255835-83-7P,

2-(Di-t-butylphosphino)-4'-(trifluoromethyl)biphenyl

255835-84-8P, 2-(Di-t-butylphosphino)-2'-(isopropyl)biphenyl

255836-32-9P 255836-65-8P 255836-67-0P

255836-68-1P, 1-[2-(Dicyclohexylphosphino)phenyl]naphthalene

255836-69-2P, 1-[2-(Di-t-butylphosphino)phenyl]naphthalene

255882-14-5P

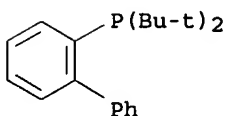
RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

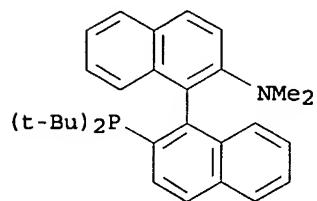
(prepd. catalyst; prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)

RN 224311-51-7 HCAPLUS

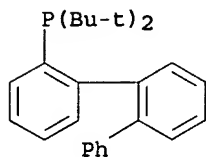
CN Phosphine, [1,1'-biphenyl]-2-ylbis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



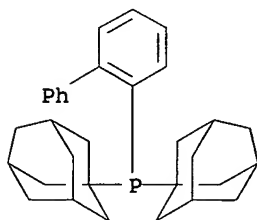
RN 224311-52-8 HCAPLUS

CN [1,1'-Binaphthalen]-2-amine, 2'-[bis(1,1-dimethylethyl)phosphino]-
N,N-dimethyl- (9CI) (CA INDEX NAME)

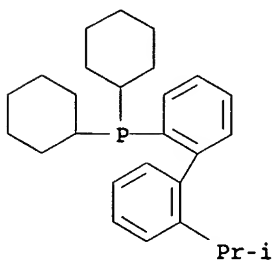
RN 224311-54-0 HCAPLUS

CN Phosphine, bis(1,1-dimethylethyl)[1,1':2',1''-terphenyl]-2-yl- (9CI)
(CA INDEX NAME)

RN 224311-55-1 HCAPLUS

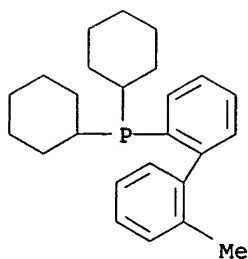
CN Phosphine, [1,1'-biphenyl]-2-ylbis(tricyclo[3.3.1.1.3,7]dec-1-yl)-
(9CI) (CA INDEX NAME)

RN 251320-85-1 HCAPLUS

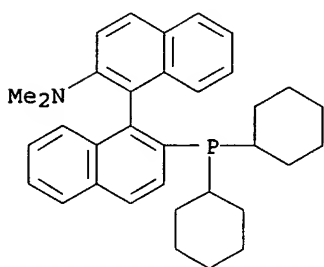
CN Phosphine, dicyclohexyl[2'-(1-methylethyl)[1,1'-biphenyl]-2-yl]-
(9CI) (CA INDEX NAME)

RN 251320-86-2 HCAPLUS

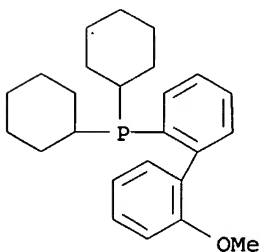
CN Phosphine, dicyclohexyl[2'-methyl[1,1'-biphenyl]-2-yl]- (9CI) (CA
INDEX NAME)



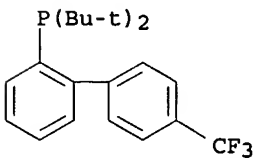
RN 255835-81-5 HCAPLUS
 CN [1,1'-Binaphthalen]-2-amine, 2'-(dicyclohexylphosphino)-N,N-dimethyl-
 (9CI) (CA INDEX NAME)



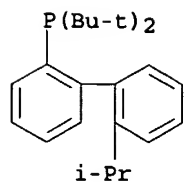
RN 255835-82-6 HCAPLUS
 CN Phosphine, dicyclohexyl(2'-methoxy[1,1'-biphenyl]-2-yl)- (9CI) (CA
 INDEX NAME)



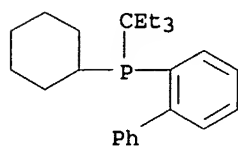
RN 255835-83-7 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl)[4'-(trifluoromethyl)[1,1'-
 biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



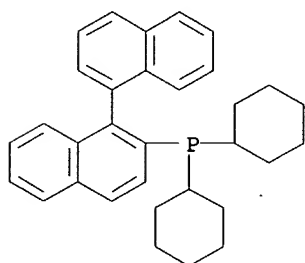
RN 255835-84-8 HCAPLUS
 CN Phosphine, bis(1,1-dimethylethyl)[2'-(1-methylethyl)[1,1'-biphenyl]-
 2-yl]- (9CI) (CA INDEX NAME)



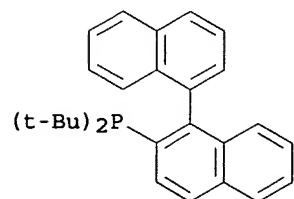
RN 255836-32-9 HCAPLUS
 CN Phosphine, [1,1'-biphenyl]-2-ylcyclohexyl(1,1-diethylpropyl)- (9CI)
 (CA INDEX NAME)



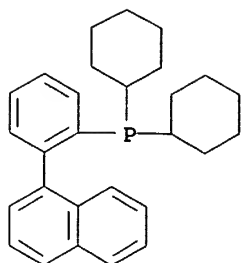
RN 255836-65-8 HCAPLUS
 CN Phosphine, [1,1'-binaphthalen]-2-ylcyclohexyl- (9CI) (CA INDEX NAME)



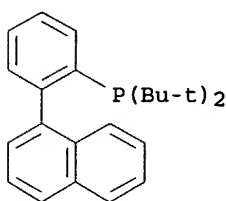
RN 255836-67-0 HCAPLUS
 CN Phosphine, [1,1'-binaphthalen]-2-ylbis(1,1-dimethylethyl)- (9CI)
 (CA INDEX NAME)



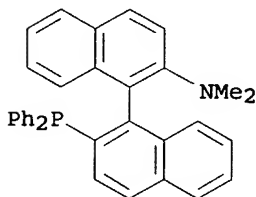
RN 255836-68-1 HCAPLUS
 CN Phosphine, dicyclohexyl[2-(1-naphthalenyl)phenyl]- (9CI) (CA INDEX NAME)



RN 255836-69-2 HCAPLUS

CN Phosphine, bis(1,1-dimethylethyl)[2-(1-naphthalenyl)phenyl]- (9CI)
(CA INDEX NAME)

RN 255882-14-5 HCAPLUS

CN [1,1'-Binaphthalen]-2-amine, 2'-(diphenylphosphino)-N,N-dimethyl-
(9CI) (CA INDEX NAME)

IC ICM C07F009-02

CC 29-7 (Organometallic and Organometalloidal
Compounds)

Section cross-reference(s): 25

ST biaryl phosphine ammine ligand prepn

transition metal catalyst; amination aryl chloride
bromide palladium catalysts; Suzuki coupling aryl chloride bromide
palladium catalysts; ketone arylation vinylation palladium
catalysts; etherification palladium catalysts

IT Amines, preparation

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)(arom.; prepn. of biaryl phosphine and amine ligands for improved
palladium-catalyzed amination reactions, Suzuki couplings,
arylations, vinylations, and carbon-oxygen bond formation
reactions)

IT Transition metal complexes

Transition metal complexes

RL: CAT (Catalyst use); USES (Uses)

(phosphine; prepn. of biaryl
phosphine and amine ligands for improved
palladium-catalyzed amination reactions, Suzuki couplings,
arylations, vinylations, and carbon-oxygen bond formation)

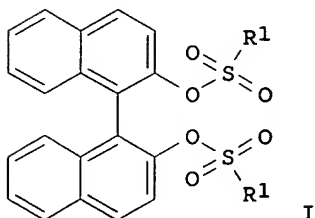
- reactions)
- IT Phosphines
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)
- IT Biaryls
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)
- IT Phosphines
 Phosphines
 RL: CAT (Catalyst use); USES (Uses)
 (transition metal complexes; prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)
- IT 534-17-8, Dicesium carbonate 3375-31-3, Diacetatopalladium 6476-37-5, Dicyclohexylphenylphosphine 14221-01-3, Tetrakis(triphenylphosphine)palladium 31570-04-4 51364-51-3, Tris(dibenzylideneacetone)dipalladium 54000-83-8, 2,6-Dimethoxyphenyl-di-t-butylphosphine 71042-54-1 74286-11-6 76189-56-5 91548-08-2 100165-88-6 133545-16-1 136779-28-7 139139-92-7 145964-33-6 149341-34-4 155806-35-2 213774-71-1 224311-49-3 247940-06-3 255837-14-0, 2,4,6-Trimethoxyphenyl-di-t-butylphosphine 255837-17-3 255837-19-5 255882-15-6 255882-16-7 255882-17-8 255882-18-9
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst; prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)
- IT 213697-53-1P
 RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepd. catalyst; prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)
- IT 224311-51-7P, 2-(Di-tert-butylphosphino)biphenyl 224311-52-8P 224311-54-0P 224311-55-1P 251320-85-1P, 2-(Dicyclohexylphosphino)-2'-isopropylbiphenyl 251320-86-2P, 2-(Dicyclohexylphosphino)-2'-methylbiphenyl 255835-81-5P 255835-82-6P 255835-83-7P, 2-(Di-t-butylphosphino)-4'-(trifluoromethyl)biphenyl 255835-84-8P, 2-(Di-t-butylphosphino)-2'-(isopropyl)biphenyl 255835-85-9P 255836-32-9P 255836-65-8P 255836-67-0P 255836-68-1P, 1-[2-(Dicyclohexylphosphino)phenyl]naphthalene 255836-69-2P, 1-[2-(Di-t-butylphosphino)phenyl]naphthalene 255882-14-5P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepd. catalyst; prepn. of biaryl phosphine and amine ligands for improved palladium-catalyzed amination reactions, Suzuki couplings, arylations, vinylations, and carbon-oxygen bond formation reactions)

ACCESSION NUMBER: 2000:25637 HCAPLUS
 DOCUMENT NUMBER: 132:78691
 TITLE: Preparation of optically active
 2,2'-bis(disubstituted as ligands for catalysts
 INVENTOR(S): Kawashima, Masatoshi
 PATENT ASSIGNEE(S): Kankyo Kagaku Center K. K., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000007688	A2	20000111	JP 1998-171703	19980618

PRIORITY APPLN. INFO.: <--
 JP 1998-171703
 19980618

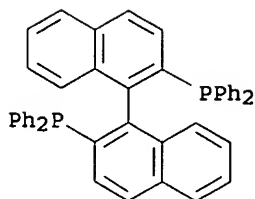
OTHER SOURCE(S): <--
 CASREACT 132:78691; MARPAT 132:78691
 GI



AB Title compds. are prepd. by reaction of optically active 2,2'-dihydroxy-1,1'-binaphthyl sulfonates I (R1 = alkyl, perfluoroalkyl, aryl, perfluoroaryl) with ClPR2R3 (R2, R3 = aryl, cycloalkyl) in the presence of H, amines, hydrogenation catalysts, and transition metal catalysts. Thus, (R)-2,2'-bis(trifluoromethanesulfonyloxy)-1,1'-binaphthyl was reacted with Ph2PCl in the presence of Pd/C, dichloro[1,2-bis(diphenylphosphino)ethane]nickel, and 1,4-diazabicyclo[2.2.2]octane, in DMF at 100° for 2 days to give 95% (R)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl.

IT 76189-55-4P, (R)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);
 PREP (Preparation)
 (prepn. of optically active bis(disubstituted phosphino)binaphthyls by condensation of bis(sulfonyloxy)binaphthyls with chlorophosphines)

RN 76189-55-4 HCAPLUS
 CN Phosphine, (1R)-[1,1'-binaphthalene]-2,2'-diylbis[diphenyl- (9CI)
 (CA INDEX NAME)



- IC ICM C07F009-50
ICS B01J031-28; C07B053-00; C07B061-00; C07M007-00
- CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 67
- ST optically active phosphinobinaphthyl **prepn** catalyst
ligand; sulfonyloxybinaphthyl condensation
chlorophosphine palladium catalyst; **transition**
metal catalyst condensation sulfonyloxybinaphthyl
chlorophosphine; amine condensation sulfonyloxybinaphthyl
chlorophosphine; nickel catalyst azabicyclooctane
condensation sulfonyloxybinaphthyl **chlorophosphine**
- IT Transition metals, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts; **prepn.** of optically active bis(disubstituted
phosphino)binaphthyls by condensation of
bis(sulfonyloxy)binaphthyls with chlorophosphines)
- IT Ligands
RL: **CAT (Catalyst use)**; USES (Uses)
(**prepn.** of optically active bis(disubstituted
phosphino)binaphthyls for catalyst ligands)
- IT 1295-35-8, Bis(η 4-1,5-cyclooctadiene)nickel 14647-23-5,
Dichloro[1,2-bis(diphenylphosphino)ethane]nickel
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst; **prepn.** of optically active bis(disubstituted
phosphino)binaphthyls by condensation of
bis(sulfonyloxy)binaphthyls with chlorophosphines)
- IT 7440-44-0, Carbon, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(hydrogenation catalyst support for Pd; **prepn.** of optically
active bis(disubstituted phosphino)binaphthyls by condensation of
bis(sulfonyloxy)binaphthyls with chlorophosphines)
- IT 7440-05-3, Palladium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(hydrogenation catalyst; **prepn.** of optically active
bis(disubstituted phosphino)binaphthyls by condensation of
bis(sulfonyloxy)binaphthyls with chlorophosphines)
- IT **76189-55-4P**, (R)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl
RL: IMF (Industrial manufacture); SPN (Synthetic preparation);
PREP (Preparation)
(**prepn.** of optically active bis(disubstituted
phosphino)binaphthyls by condensation of
bis(sulfonyloxy)binaphthyls with chlorophosphines)

L26 ANSWER 45 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:468097 HCAPLUS
DOCUMENT NUMBER: 131:88050
TITLE: Process for preparing diphosphines ligands and
catalysts containing the same
INVENTOR(S): Kohlpaintner, Christian W.; Hanson, Brian E.;
Ding, Hao
PATENT ASSIGNEE(S): Celanese International Corp., USA
SOURCE: U.S., 15 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

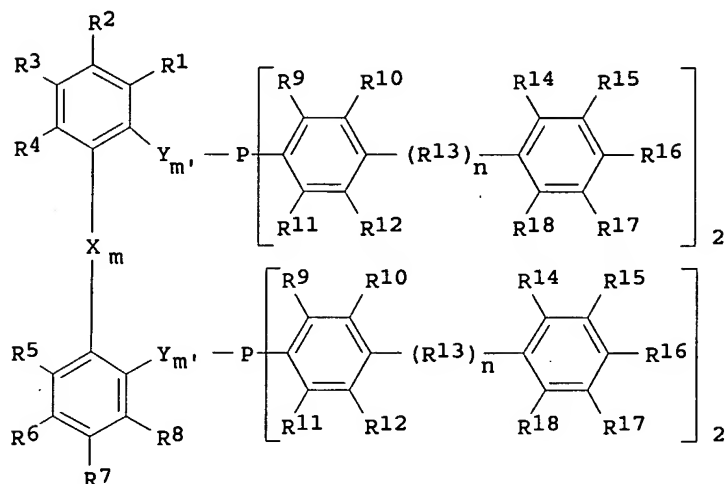
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5929273	A	19990727	US 1996-634534	19960418

PRIORITY APPLN. INFO.:

US 1996-634534

19960418

OTHER SOURCE(S): MARPAT 131:88050
GI



I

AB The present invention provides novel water-sol. diphosphines I [X, Y = each independently selected from the group consisting of alkyl C1-20, alkenyl C1-20, alkynyl C1-20, Ph, naphthyl, -NR- (R = H, alkyl C1-20, phenyl), O, S; m, m' = 0-1; R1-R8 = each independently selected from the group consisting of H, halo, nitro, amino, alkyl C1-20, alkoxy, OH, -C(O)-OR, -CN, SOM, -N-(R)X- (X = halide), and aryl; R1 and R2, R2 and R3, R3 and R4, R5 and R6, R6 and R7, R7 and R8 may also (in addn. to the above) from a cyclic ring contg. a total of 2 to 6 atoms selected from the group consisting of carbon, oxygen, nitrogen, sulfur, and mixts. thereof, with the proviso that said ring can be substituted or unsubstituted; R9-R12 and R14-R18 = each independently selected from the group consisting of H, halo, -SOM, M = alkali, alk. earth metals, and N(R) (R = H, alkyl C1-20, phenyl), alkyl C1-20, -COM, -N+(R)3X- (X = halide), -CN, -OR, -C(O)-OR, and -P(R)2, where R = H, alkyl C1-20, phenyl; R13 = group consisting of a straight chain or branched chain alkyl C1-20, alkenyl C1-20, alkynyl C1-20, Ph, naphthyl, anthracyl, and substituted Ph, naphthyl, and anthryl; n = 0-20]. A process for prepg. an aryl diphosphine complexed with a transition metal to form a novel catalyst useful in such applications as hydroformylation.

Thus, prepn. of I ($X_m, Y_m' = -$, $R_1-R_{12} = H$, $R_{13} = CH_2$, $n = 3$) was prepd. in three steps starting from p-(3-phenylpropyl)phenyllithium, the diphosphine was used as cocatalyst for palladium catalyzed hydroformylation of 1-octene.

IT 196309-35-0P 229956-59-6P 229963-58-0P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

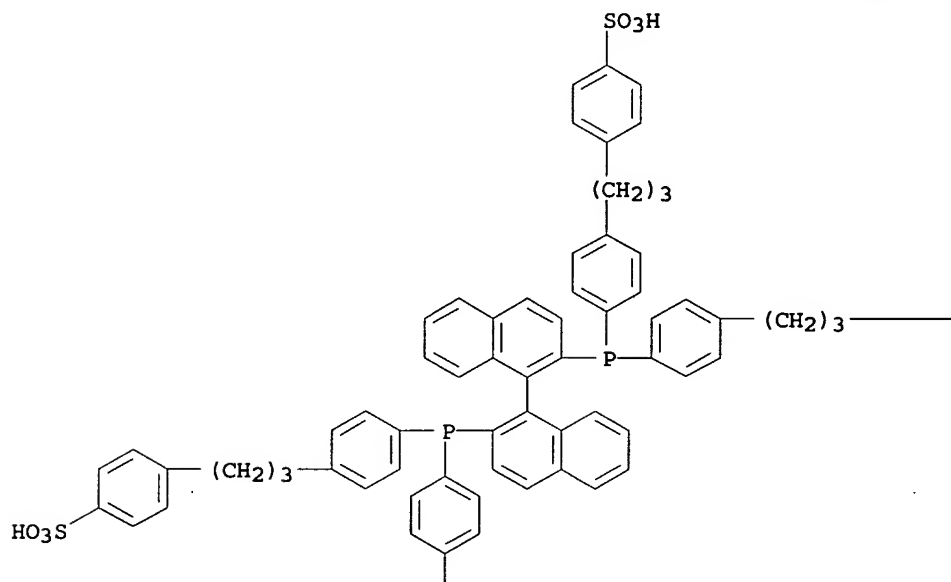
PREP (Preparation); USES (Uses)

(process for prepg. water sol. diphosphines
ligands and catalysts contg. same)

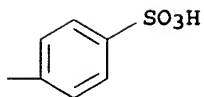
RN 196309-35-0 HCAPLUS

CN Benzenesulfonic acid, 4,4',4'',4'''-[[[1,1'-binaphthalene]-2,2'-diylbis[phosphinidynebis(4,1-phenylene-3,1-propanediyl)]]]tetrakis-, tetrasodium salt (9CI) (CA INDEX NAME)

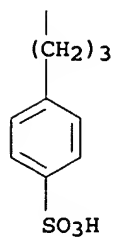
PAGE 1-A



PAGE 1-B



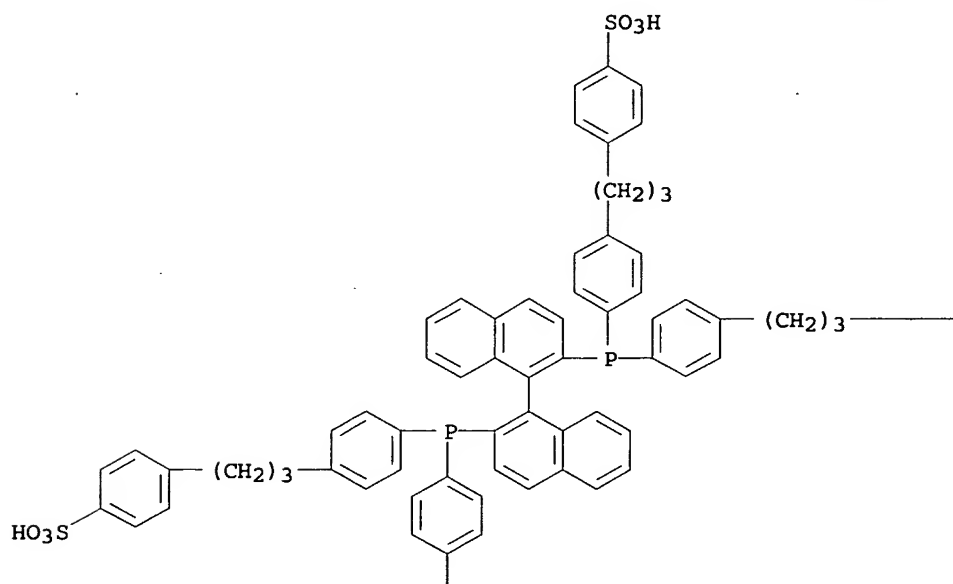
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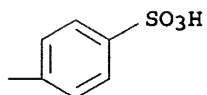
●4 Na

RN 229956-59-6 HCAPLUS
 CN Benzenesulfonic acid, 4,4',4'',4'''-[[[1,1'-binaphthalene]-2,2'-diylbis[phosphinidynebis(4,1-phenylene-3,1-propanediyl)]]tetrakis-(9CI) (CA INDEX NAME)

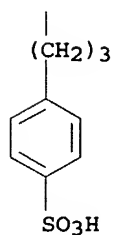
PAGE 1-A



PAGE 1-B

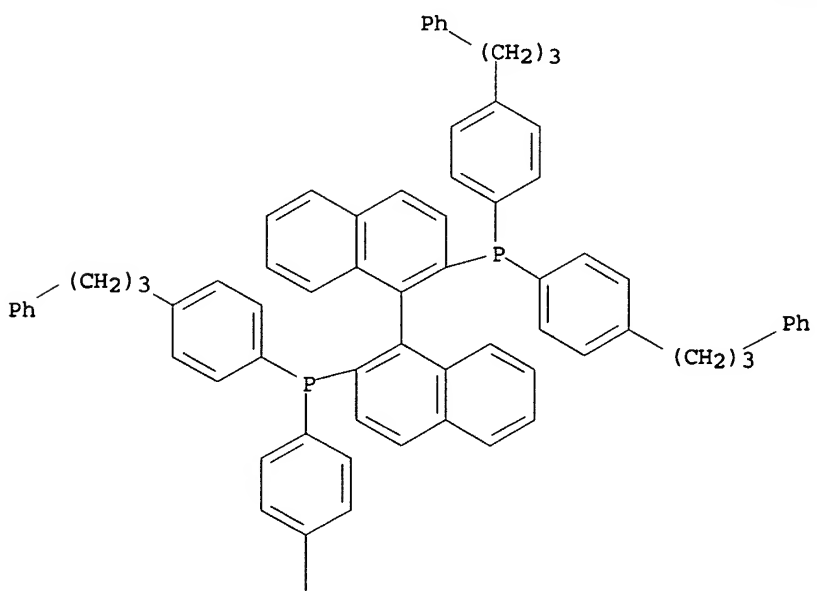


PAGE 2-A

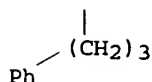


RN 229963-58-0 HCAPLUS
CN Phosphine, (1S)-[1,1'-binaphthalene]-2,2'-diylbis[bis(4-(3-phenylpropyl)phenyl)]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07F009-50

INCL 562035000

CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 21, 67

IT 196309-35-0P 196309-36-1P 229956-59-6P

229956-60-9P 229963-58-0P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(process for prepg. water sol. diphosphines ligands and catalysts contg. same)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L26 ANSWER 46 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:345764 HCAPLUS

DOCUMENT NUMBER: 131:58650

TITLE: Preparation of optically active phosphines
supported on solids as ligands for palladium
asymmetric reaction catalysts

INVENTOR(S): Uozumi, Hiroyasu; Hayashi, Tamio

PATENT ASSIGNEE(S): Nissan Chemical Industries, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11147890	A2	19990602	JP 1997-313964	19971114

PRIORITY APPLN. INFO.:

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JP 1997-313964

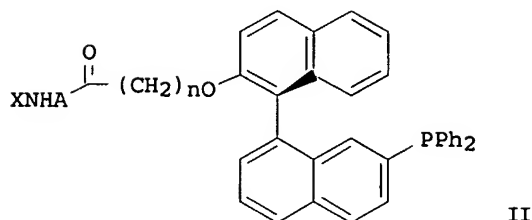
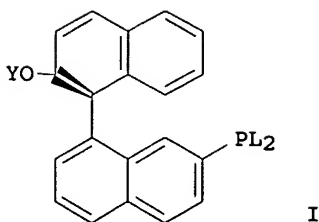
199711
14

OTHER SOURCE(S):

MARPAT 131:58650

GI

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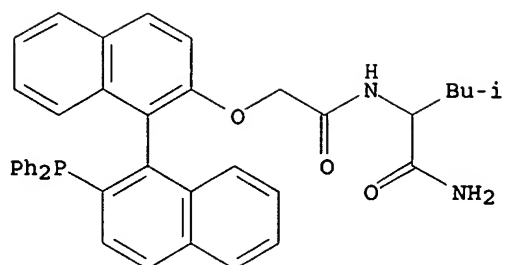


AB Title compds. I ($Y = (CH_2)_nCOANHX$; XNH = residue of resin terminated with amino group; A = (protected) L- or D-amino acid; $n = 1-5$) and II (XNH , A , n = same as I) are prepd. TentaGel S-NH₂ was condensed with Fmoc-L-valine in the presence of 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride and N-hydroxybenzotriazole in DMF at room temp. for 2 h, deprotected with piperidine/DMF, and condensed with I ($Y = HO_2CCH_2$) in the presence of 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride in DMF for 9 h to give a phosphine supported on a polymer. 1,3-Diphenyl-3-acetoxy-1-propene was reacted with 3-methyl-2,4-pentanedione in the presence of aq. K₂CO₃ and a catalyst prepd. from the phosphine and $[\pi-C_3H_5PCl]_2$ at room temp. for 12 h to give 49% $PhCH:CHCHPhCMe(COMe)_2$ with 78% e.e.

IT 227750-52-9DP, polymer-supported 227750-53-0DP,
polymer-supported 227750-54-1DP, polymer-supported
227753-90-4DP, polymer-supported 227753-91-5DP,
polymer-supported 227753-92-6DP, polymer-supported
227753-93-7DP, polymer-supported 227753-94-8DP,
polymer-supported 227753-95-9DP, polymer-supported
227753-96-0DP, polymer-supported 227753-97-1DP,
polymer-supported 227753-98-2DP, polymer-supported
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of optically active phosphines
supported on solids as ligands for palladium asym.
reaction catalysts)

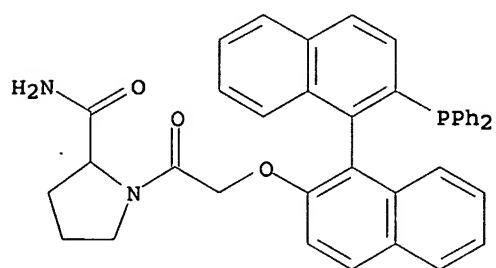
RN 227750-52-9 HCAPLUS

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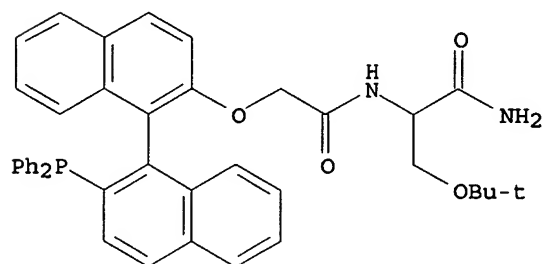
RN 227750-53-0 HCAPLUS

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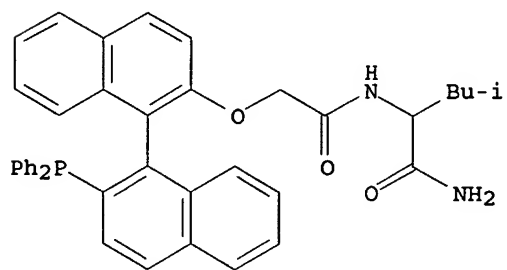
RN 227750-54-1 HCAPLUS

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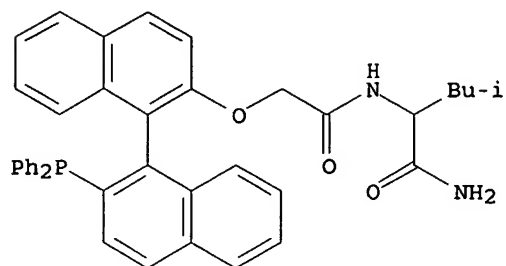
RN 227753-90-4 HCAPLUS

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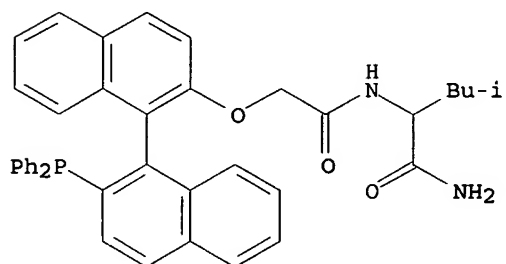
RN 227753-91-5 HCAPLUS

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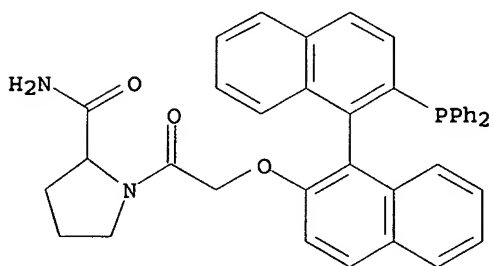
RN 227753-92-6 HCAPLUS

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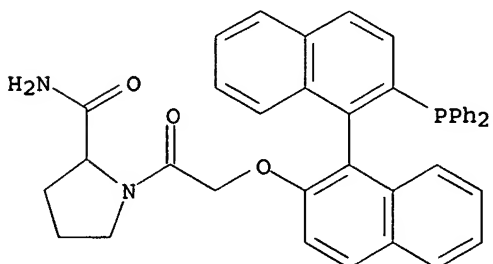
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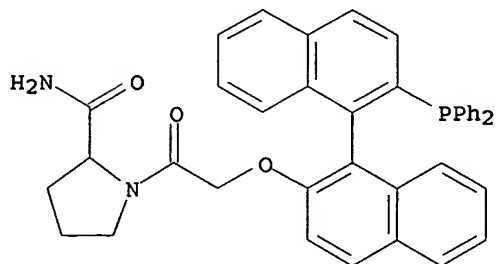
RN 227753-94-8 HCAPLUS

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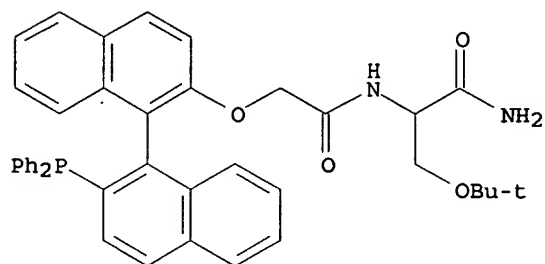
RN 227753-95-9 HCAPLUS

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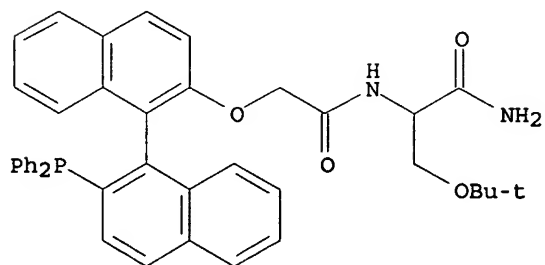
RN 227753-96-0 HCAPLUS

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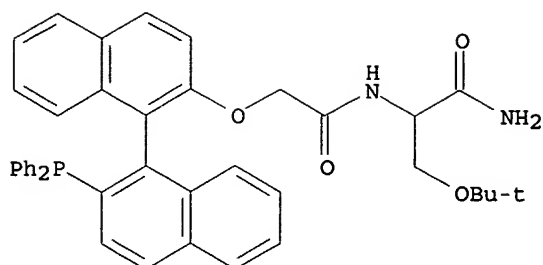
RN 227753-97-1 HCAPLUS

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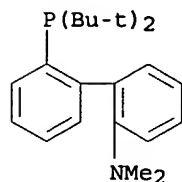
RN 227753-98-2 HCAPLUS

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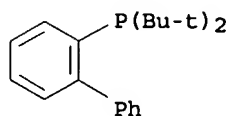


- IC ICM C07F009-50
ICS B01J031-24; C07M007-00
- CC 25-16 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 29, 38, 67
- IT 227750-52-9DP, polymer-supported 227750-53-0DP,
polymer-supported 227750-54-1DP, polymer-supported
227753-90-4DP, polymer-supported 227753-91-5DP,
polymer-supported 227753-92-6DP, polymer-supported
227753-93-7DP, polymer-supported 227753-94-8DP,
polymer-supported 227753-95-9DP, polymer-supported
227753-96-0DP, polymer-supported 227753-97-1DP,
polymer-supported 227753-98-2DP, polymer-supported
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of optically active phosphines
supported on solids as ligands for palladium asym.
reaction catalysts)
- L26 ANSWER 47 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
- ACCESSION NUMBER: 1999:261305 HCAPLUS
DOCUMENT NUMBER: 130:337883
TITLE: Novel electron-rich bulky phosphine ligands
facilitate the palladium-catalyzed preparation
of diaryl ethers
- AUTHOR(S): Aranyos, Attila; Old, David W.; Kiyomori, Ayumu;
Wolfe, John P.; Sadighi, Joseph P.; Buchwald,
Stephen L.
- CORPORATE SOURCE: Department of Chemistry, Massachusetts Institute
of Technology, Cambridge, MA, 02139, USA
- SOURCE: Journal of the American Chemical Society (
1999), 121(18), 4369-4378
CODEN: JACSAT; ISSN: 0002-7863
- PUBLISHER: American Chemical Society
- DOCUMENT TYPE: Journal
- LANGUAGE: English
- OTHER SOURCE(S): CASREACT 130:337883
- AB A general method for the palladium-catalyzed formation of diaryl
ethers, e.g., PhOC6H4COMe-4, is described. Electron-rich, bulky
aryldialkylphosphine ligands, e.g., 2-PhC6H4P(CMe3)2, in which the
two alkyl groups are either tert-Bu or 1-adamantyl, are the key to
the success of the transformation. A wide range of
electron-deficient, electronically neutral and electron-rich aryl
bromides, chlorides, and triflates can be combined with a variety of
phenols with the use of sodium hydride or potassium phosphate as
base in toluene at 100°C. The bulky yet basic nature of the
phosphine ligand is thought to be responsible for increasing the
rate of reductive elimination of the diaryl ether from palladium.
- IT 224311-49-3P 224311-51-7P 224311-52-8P
224311-54-0P 224311-55-1P
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of diaryl ethers using palladium catalyst and
phosphine ligands)

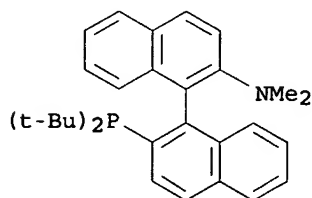
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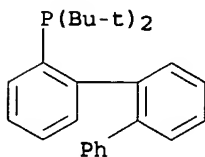
RN 224311-51-7 HCAPLUS
CN Phosphine, [1,1'-biphenyl]-2-ylbis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



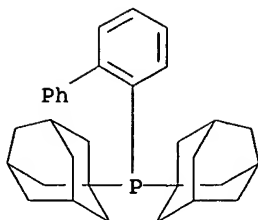
RN 224311-52-8 HCAPLUS
CN [1,1'-Binaphthalen]-2-amine, 2'-[bis(1,1-dimethylethyl)phosphino]-N,N-dimethyl- (9CI) (CA INDEX NAME)



RN 224311-54-0 HCAPLUS
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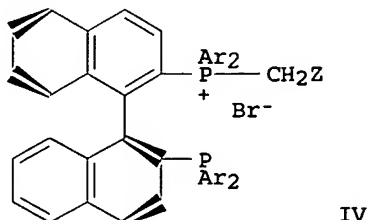
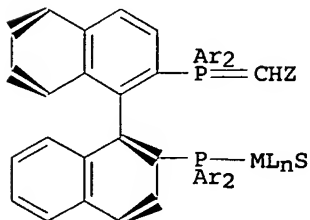
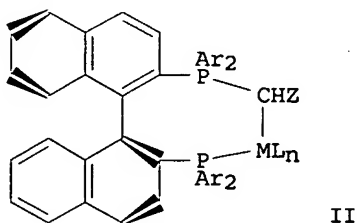
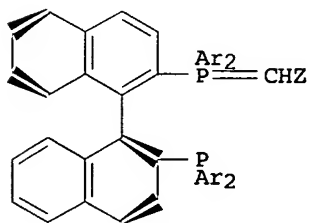


RN 224311-55-1 HCAPLUS
CN Phosphine, [1,1'-biphenyl]-2-ylbis(tricyclo[3.3.1.1.3,7]dec-1-yl)- (9CI) (CA INDEX NAME)



CC 25-9 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
 IT 224311-49-3P 224311-51-7P 224311-52-8P
 224311-54-0P 224311-55-1P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of diaryl ethers using palladium catalyst and
 phosphine ligands)
 REFERENCE COUNT: 67 THERE ARE 67 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L26 ANSWER 48 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1998:774394 HCAPLUS
 DOCUMENT NUMBER: 130:139441
 TITLE: Preparation of novel chiral phosphorus ylides
 and their palladium, rhodium and ruthenium
 complexes
 AUTHOR(S): Ohta, Tetsuo; Fujii, Takeshi; Kurahashi,
 Nobukazu; Sasayama, Hiroyuki; Furukawa, Isao
 CORPORATE SOURCE: Dep. Mol. Sci. Technol., Doshisha Univ., Kyoto,
 610-0394, Japan
 SOURCE: Science and Engineering Review of Doshisha
 University (1998), 39(3), 133-141
 CODEN: DDRKAZ; ISSN: 0036-8172
 PUBLISHER: Doshisha University, Science and Engineering
 Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese
 GI

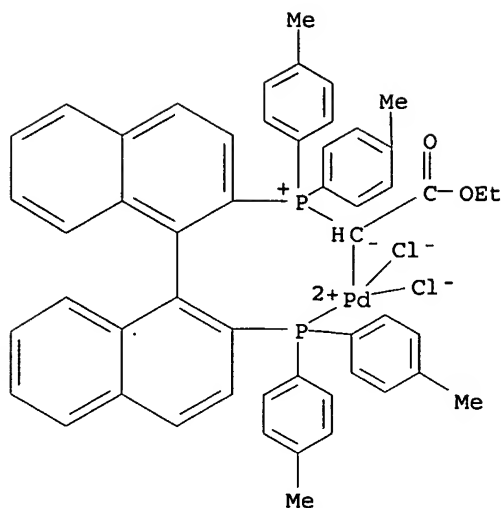


AB New types of carbonyl- and cyano-stabilized chiral monoylides of TolBINAP (2,2'-bis(di(4-methylphenyl)phosphino)-1,1'-binaphthyl) (I; Ar = 4-MeC₆H₄; Z = CO₂Et, CO₂Me₃, cyano) and their palladium, rhodium and ruthenium complexes [II or III; MLn = PdCl₂, Pd(dba), PhCl(cod), RuBr₂(p-cymene); Ar, Z = same as above] were **prepd.** and characterized by means of IR, ¹H and ³¹P NMR spectra. **Monophosphine-monophosphonium salts** (IV; Ar, Z = same as above) were **prepd.** by the reaction of TolBINAP with BrCH₂CO₂R (R CH₂CH₃, C(CH₃)₃) or BrCH₂CN without solvent. These salts were converted to the corresponding **monophosphine-monoylides** (YLIPHOS) by treatment with methylolithium. Simple mixing of YLIPHOS and **transition metal precursors**, such as PdCl₂(PhCN)₂, Pd₂(dba)₃(CHCl₃), [RhCl(cod)]₂, [RuBr₂(p-cymene)]₂ afforded YLIPHOS-Metal complexes. ³¹P NMR spectra of YLIPHOS-Rh complex exhibited that one phosphorus atom coordinated to the **metal center** and another did not attach directly to Rh according to the Rh-P coupling consts. The νC=O frequencies of the ester group of the complexes exhibited blue shifts relative to those of the free ylides, and ¹H NMR data for the complexes revealed a downfield shift of the methine proton resonances relative to those of the free ylides. These observations suggested that YLIPHOS ligands coordinate to the **metal center** through the methine carbon atom of the ylide and the phosphorus atom of **phosphine**. At the same time, the complexes are considered to be an equil. mixt. of bidentate coordination II and monodentate coordination III of the YLIPHOS ligand to the **metal center**. YLIPHOS-Pd complexes showed catalytic activities for the coupling reaction of aryl halide and the Grignard reagent. Though the asym. induction was not satisfactory, this is the first example of the use of chiral ylide complexes for the asym. catalysis, and it is expected to develop new asym. reactions catalyzed by YLIPHOS complexes.

IT 220119-48-2P 220119-50-6P 220119-51-7P
 220119-52-8P 220119-53-9P 220119-55-1P
 220119-57-3P 220119-63-1P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of novel chiral phosphorus ylides and their palladium,
 rhodium and ruthenium complexes as catalysts for asym. induction)

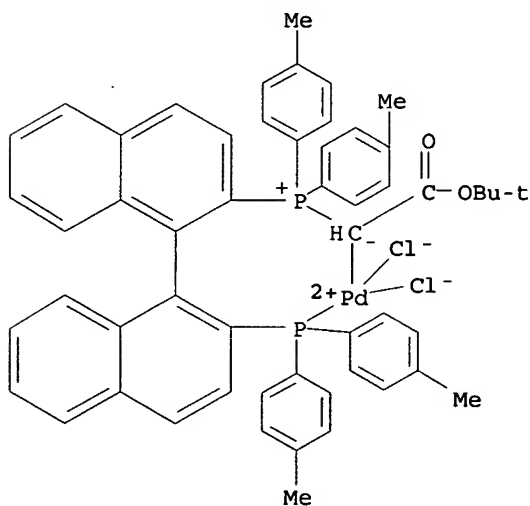
RN 220119-48-2 HCAPLUS

CN Palladium, [(2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphonium
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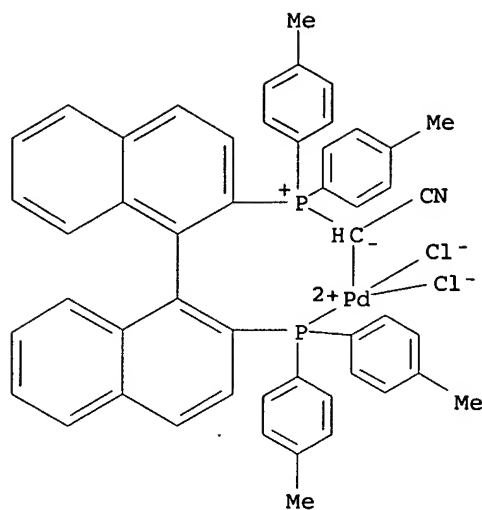
RN 220119-50-6 HCAPLUS

CN Palladium, [[2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphonium (1-η)-2-(1,1-dimethylethoxy)-2-oxoethylidene]dichloro-, (SP-4-3)-(9CI) (CA INDEX NAME)



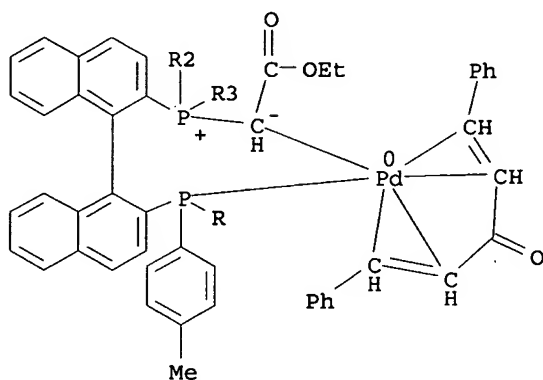
RN 220119-51-7 HCAPLUS

CN Palladium, [[2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphonium (1-η)-cyanomethylidene]dichloro-, (SP-4-3)-(9CI) (CA INDEX NAME)

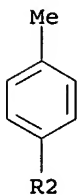
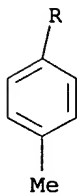


RN 220119-52-8 HCAPLUS
 CN Palladium, [[2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphonium (1-η)-2-ethoxy-2-oxoethylide] [(1,2,4,5-η)-1,5-diphenyl-1,4-pentadien-3-one] - (9CI) (CA INDEX NAME)

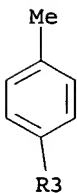
PAGE 1-A



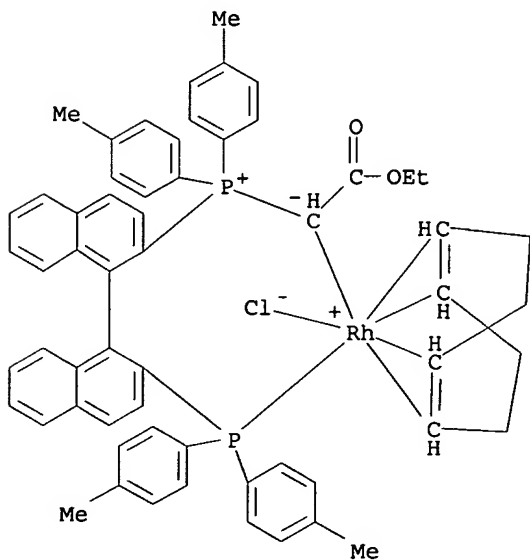
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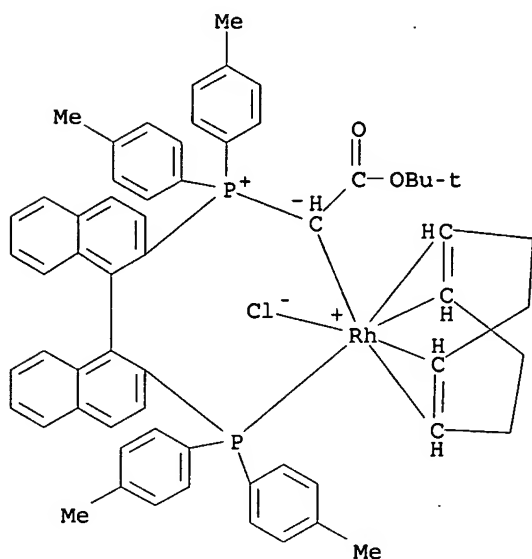
PAGE 3-A



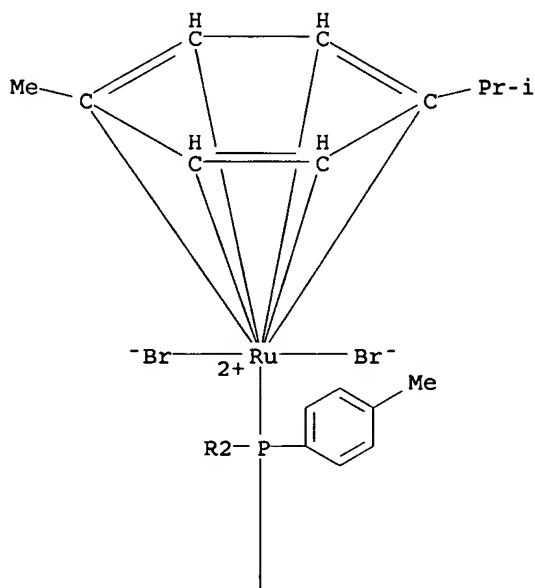
RN 220119-53-9 HCAPLUS
 CN Rhodium, [[2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphonium (1-η)-2-ethoxy-2-oxoethylidene]chloro[(1,2,5,6-η)-1,5-cyclooctadiene]- (9CI) (CA INDEX NAME)



RN 220119-55-1 HCAPLUS
 CN Rhodium, [[2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphonium (1-η)-2-(1,1-dimethylethoxy)-2-oxoethylidene]chloro[(1,2,5,6-η)-1,5-cyclooctadiene]- (9CI) (CA INDEX NAME)

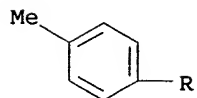
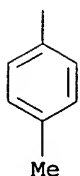


RN 220119-57-3 HCAPLUS
 CN Ruthenium, [[[(1S)-2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphoranylidene]acetonitrile]dibromo[(1,2,3,4,5,6-η)-1-methyl-4-(1-methylethyl)benzene]- (9CI) (CA INDEX NAME)

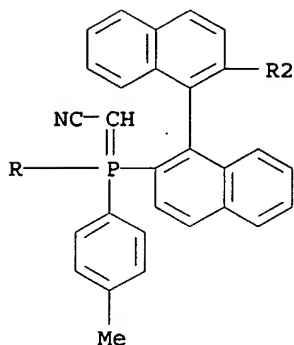


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PAGE 2-A

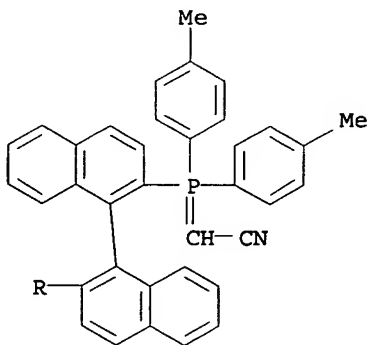


PAGE 3-A

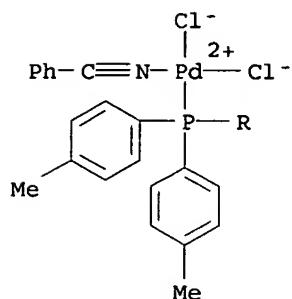


RN 220119-63-1 HCAPLUS
 CN Palladium, (benzonitrile) [(((1S)-2'-[bis(4-methylphenyl)phosphino-
 κP] [1,1'-binaphthalen]-2-yl]bis(4-
 methylphenyl)phosphoranylidene]acetonitrile]dichloro-, (SP-4-3)-
 (9CI) (CA INDEX NAME)

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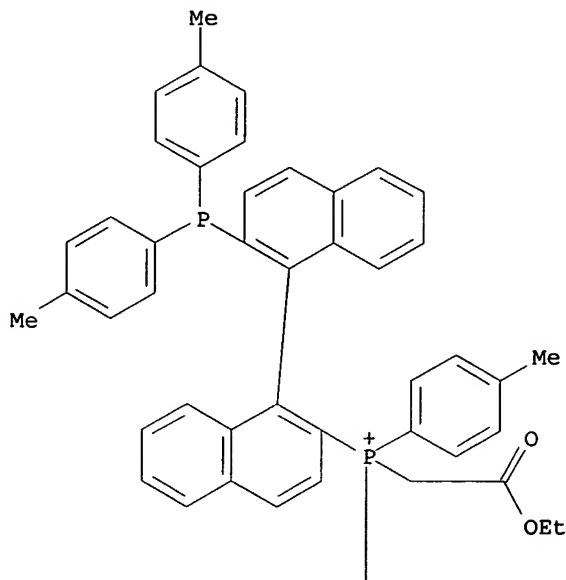
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 220135-21-7P 220135-24-0P 220135-25-1P
 220135-27-3P 220135-28-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. of novel chiral phosphorus ylides and their palladium,
 rhodium and ruthenium complexes as catalysts for asym. induction)

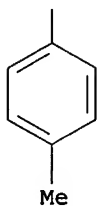
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CN Phosphonium, [(1S)-2'-[bis(4-methylphenyl)phosphino][1,1'-
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 bromide (9CI) (CA INDEX NAME)

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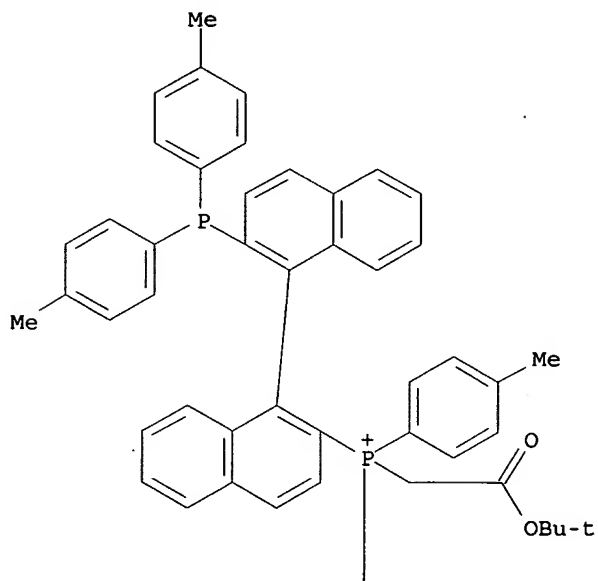


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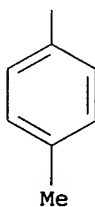


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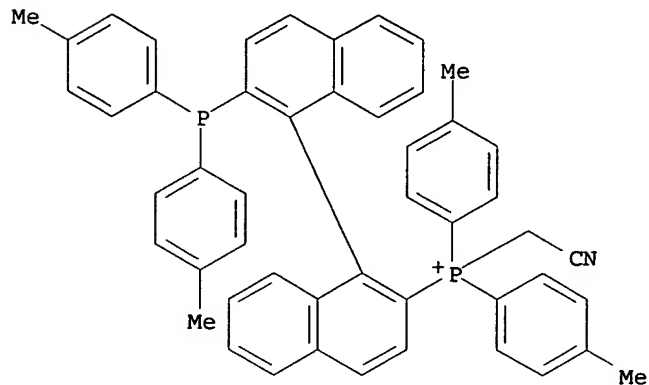
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PAGE 2-A

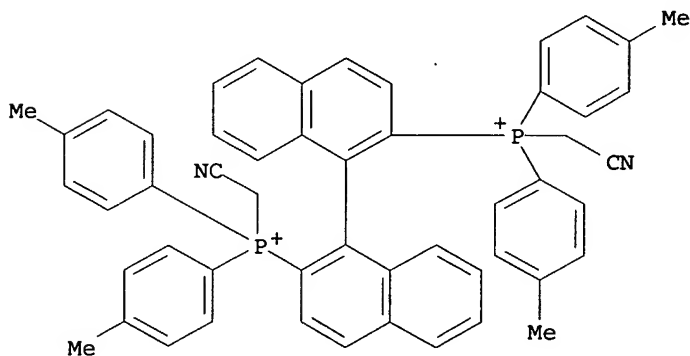


RN 220135-20-6 HCAPLUS
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 (CA INDEX NAME)



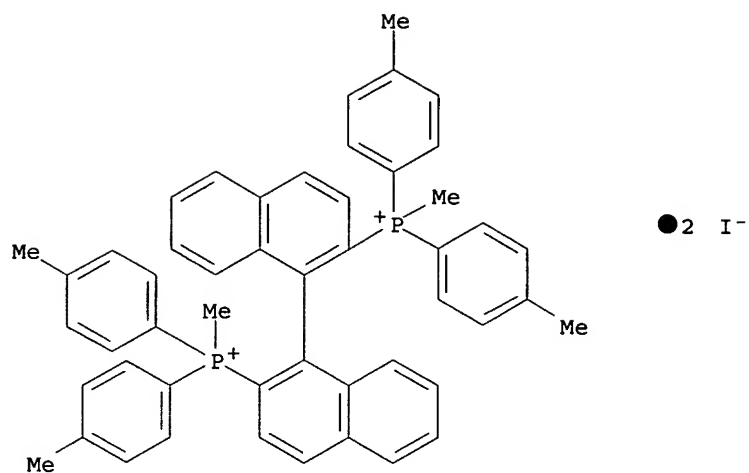
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RN 220135-21-7 HCAPLUS
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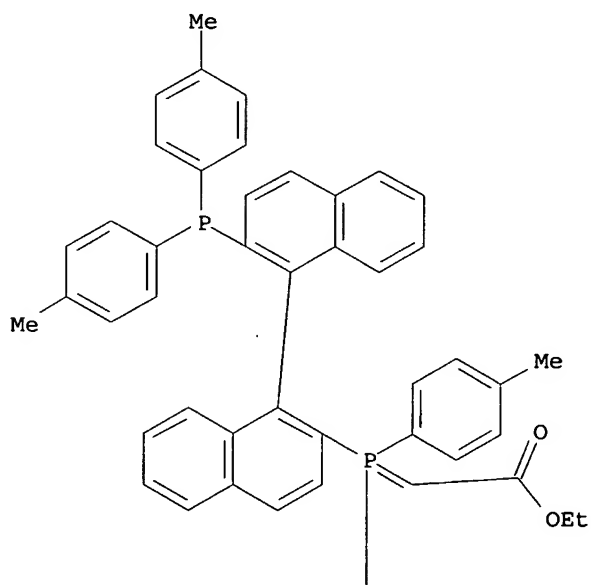
●2 Br⁻

RN 220135-24-0 HCAPLUS
 CN Phosphonium, (1S)-[1,1'-binaphthalene]-2,2'-diylbis[methylbis(4-methylphenyl)-, diiodide (9CI) (CA INDEX NAME)

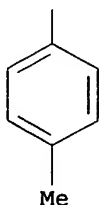


RN 220135-25-1 HCAPLUS
 CN Acetic acid, [[(1S)-2'-[bis(4-methylphenyl)phosphino][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphoranylidene]-, ethyl ester (9CI) (CA INDEX NAME)

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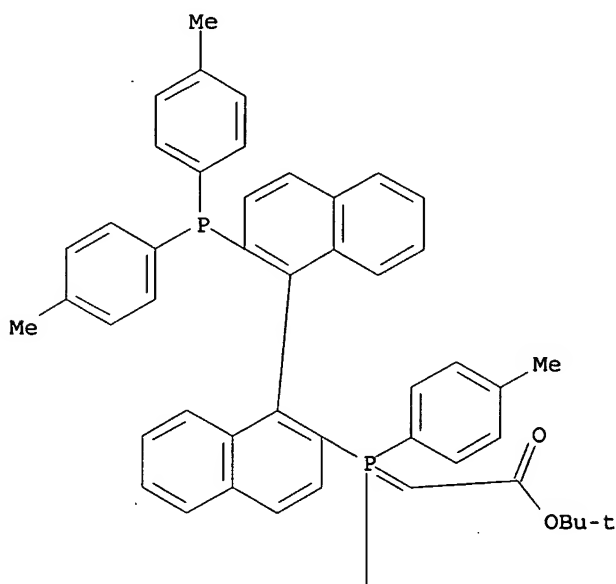


PAGE 2-A

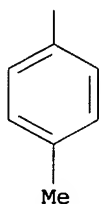


RN 220135-27-3 HCAPLUS
 CN Acetic acid, [[[1S]-2'-[bis(4-methylphenyl)phosphino][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphoranylidene]-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)

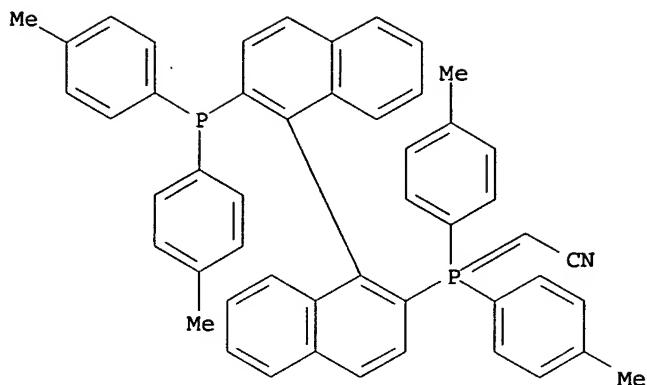
PAGE 1-A



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RN 220135-28-4 HCAPLUS
 CN Acetonitrile, [[[1S]-2'-[bis(4-methylphenyl)phosphino][1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphoranylidene]- (9CI) (CA INDEX NAME)



IT 220119-59-5P 220119-61-9P 220119-65-3P

220119-66-4P 220119-67-5P

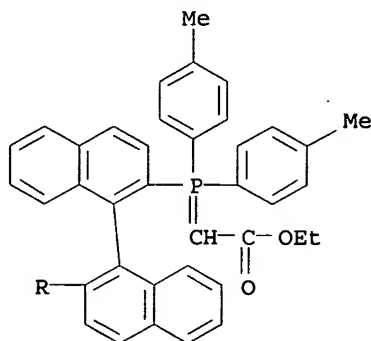
RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of novel chiral phosphorus ylides and their palladium,
rhodium and ruthenium complexes as catalysts for asym. induction)

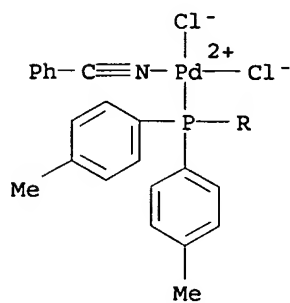
RN 220119-59-5 HCAPLUS

CN Palladium, (benzonitrile)dichloro[ethyl [[[(1S)-2'-[bis(4-methylphenyl)phosphino-κP] [1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphoranylidene]acetate]-, (SP-4-3)- (9CI) (CA INDEX NAME)

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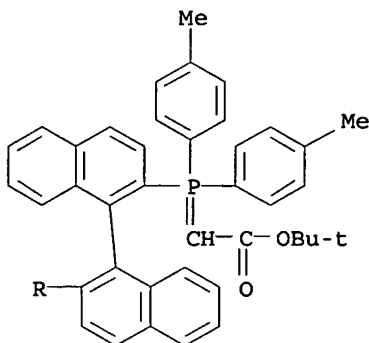
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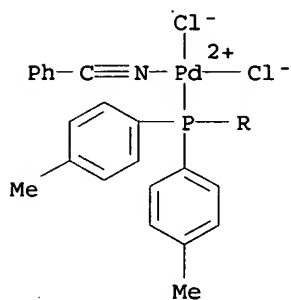
RN 220119-61-9 HCAPLUS

CN Palladium, (benzonitrile)dichloro[1,1-dimethylethyl
 [[(1S)-2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-
 2-yl]bis(4-methylphenyl)phosphoranylidene]acetate]-, (SP-4-3)- (9CI)
 (CA INDEX NAME)

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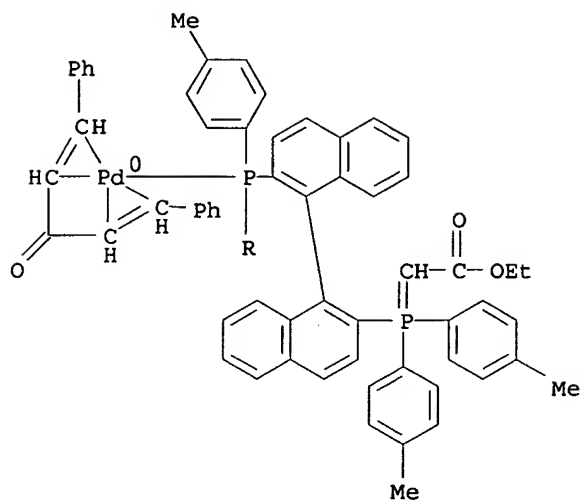
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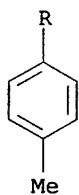
RN 220119-65-3 HCAPLUS

CN Palladium, [(1,2,4,5-η)-1,5-diphenyl-1,4-pentadien-3-one] [ethyl
 [[(1S)-2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-
 2-yl]bis(4-methylphenyl)phosphoranylidene]acetate]- (9CI) (CA INDEX
 NAME)

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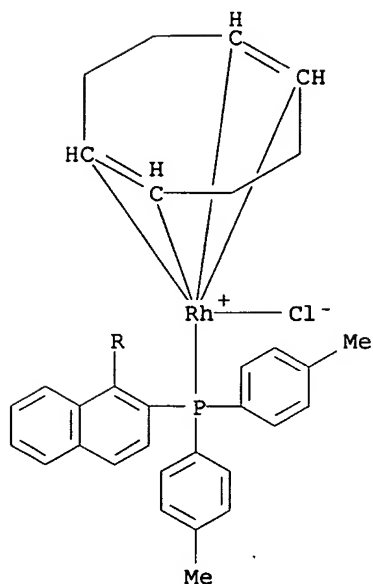


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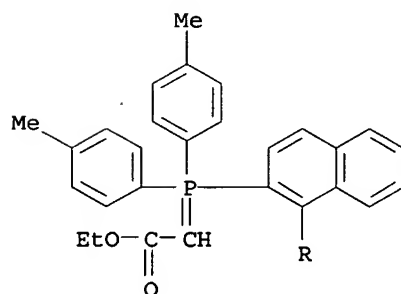


RN 220119-66-4 HCAPLUS
 CN Rhodium, chloro[(1,2,5,6-η)-1,5-cyclooctadiene] [ethyl
 [[(1S)-2'-[bis(4-methylphenyl)phosphino-κP][1,1'-binaphthalen]-
 2-yl]bis(4-methylphenyl)phosphoranylidene]acetate]- (9CI) (CA INDEX
 NAME)

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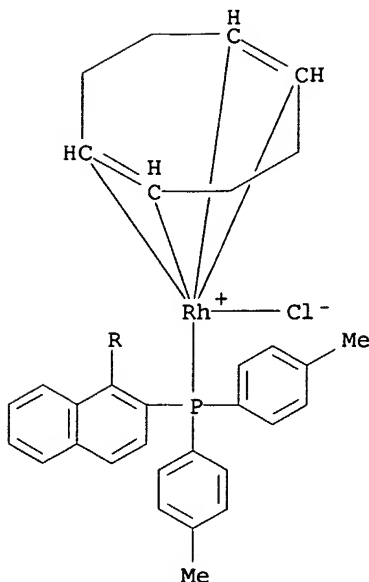


PAGE 2-A

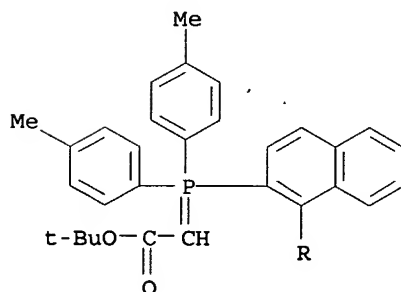


RN 220119-67-5 HCAPLUS
 CN Rhodium, chloro[(1,2,5,6- η)-1,5-cyclooctadiene] [1,1-dimethylethyl [[(1S)-2'-[bis(4-methylphenyl)phosphino- κ P] [1,1'-binaphthalen]-2-yl]bis(4-methylphenyl)phosphoranylidene]acetate]-(9CI) (CA INDEX NAME)

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- CC 29-13 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 25, 67, 78
- IT Ylides
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(phosphorus; prepn. of novel chiral phosphorus ylides and their palladium, rhodium and ruthenium complexes as catalysts for asym. induction)
- IT Transition metal complexes
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(prepn. of novel chiral phosphorus ylides and their palladium, rhodium and ruthenium complexes as catalysts for asym. induction)
- IT 220119-48-2P 220119-50-6P 220119-51-7P
220119-52-8P 220119-53-9P 220119-55-1P
220119-57-3P 220119-63-1P
RL: CAT (Catalyst use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(prepn. of novel chiral phosphorus ylides and their palladium, rhodium and ruthenium complexes as catalysts for asym. induction)

IT 220135-17-1P 220135-18-2P 220135-20-6P
 220135-21-7P 220135-24-0P 220135-25-1P
 220135-27-3P 220135-28-4P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (prepn. of novel chiral phosphorus ylides and their palladium,
 rhodium and ruthenium complexes as catalysts for asym. induction)

IT 5787-28-0P, (S)-2-Phenylbutane 220119-59-5P
 220119-61-9P 220119-65-3P 220119-66-4P
 220119-67-5P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of novel chiral phosphorus ylides and their palladium,
 rhodium and ruthenium complexes as catalysts for asym. induction)

L26 ANSWER 49 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:466349 HCAPLUS

DOCUMENT NUMBER: 129:124055

TITLE: Preparation of chiral
 (5,6),(5',6')-bis(3,4-methylenedioxy)biphenyl-
 2,2'-diylphosphine compound,
 intermediate for preparing the same,
 transition metal complex
 having the same diphosphine compound
 as ligand and asymmetric hydrogenation
 catalyst

INVENTOR(S): Saito, Takao; Yokozawa, Tohru; Xiaoyaong, Zhang;
 Sayo, Noboru

PATENT ASSIGNEE(S): Takasago International Corp., Japan

SOURCE: Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

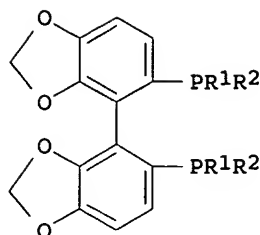
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 850945	A1	19980701	EP 1997-403152	199712 24
EP 850945	B1	20021127		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10182678	A2	19980707	JP 1996-359818	199612 26
JP 3148136	B2	20010319		
US 5872273	A	19990216	US 1997-996405	199712 22
PRIORITY APPLN. INFO.:			JP 1996-359818	A 199612 26

OTHER SOURCE(S): MARPAT 129:124055

GI



AB The present invention provides a novel diphosphine compd. of the formula (I; R1 and R2 represent independently cycloalkyl, unsubstituted or substituted Ph, or five-membered heteroarom. ring residue). The compd. is useful as a ligand having the excellent performance (diastereoselectivity, enantioselectivity, and catalytic activity) for an asym. reaction, in particular, asym. hydrogenation catalyst. Thus, diphenyl[2-iodo-(3,4)-methylenedioxyphenyl]phosphine (prepn. given) was coupled to each other in the presence of Cu powder in DMF at 140° for 8 h to give (±)-[(5,6)(5',6')-bis(methylenedioxy)biphenyl-2,2'-diyl]bis(diphenylphosphine oxide) [(±)-II]. Optical resolu. of the latter compd. by cyclocondensation with (-)-dibenzoyl-L-tartaric acid in EtOAc at 60° for 30 min followed by alkali hydrolysis gave (-)-II, which was reduced by SiCl4 in the presence of dimethylaniline in toluene at 100° for 4 h to give (-)-I (R1 = R2 = Ph) [(-)-SEGPHOS]. [Ru(COD)Cl2]2, (-)-SEGPHOS, Et3N, and toluene was refluxed for 15 h under N followed distg. off the solvent and vacuum drying to give the catalyst Ru2Cl4[(-)-SEGPHOS]2NEt3. The latter catalyst, 2-oxo-1-propanol, and MeOH was autoclaved with stirring at H pressure 10 atm and 65° for 16 to give optically active 1,2-propanediol of 97.4%ee in 99.8%.

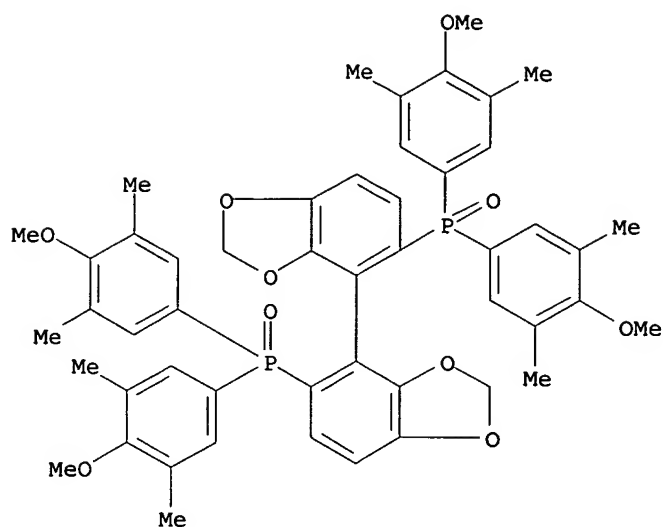
IT 210169-37-2P 210169-38-3P 210169-39-4P
210169-40-7P 210169-41-8P 210169-42-9P
210169-43-0P 210169-44-1P 210169-45-2P
210169-46-3P 210169-47-4P 210169-48-5P
210169-49-6P 210169-50-9P 210169-51-0P
210169-52-1P

RL: CAT (Catalyst use); PUR (Purification or recovery);
SPN (Synthetic preparation); PREP (Preparation); USES
(Uses)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

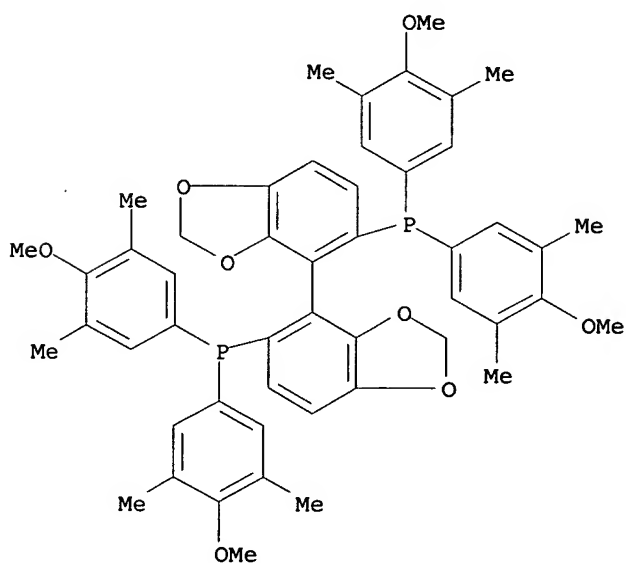
RN 210169-37-2 HCAPLUS

CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-methoxy-3,5-dimethylphenyl)-, (+)- (9CI) (CA INDEX NAME)



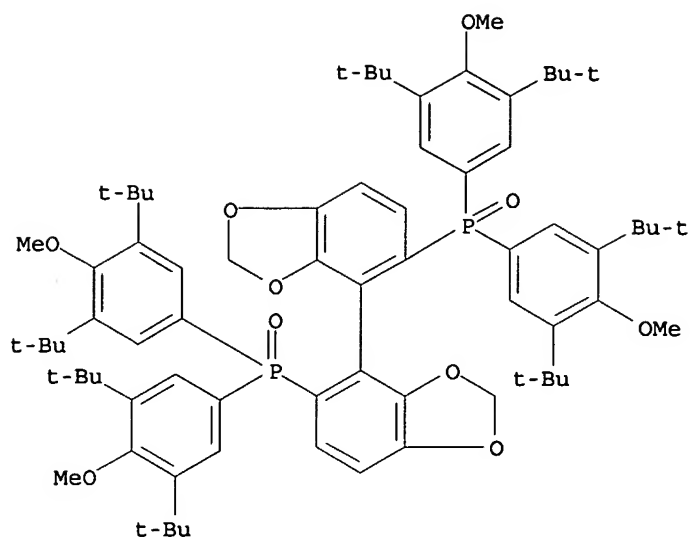
RN 210169-38-3 HCAPLUS

CN Phosphine, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[bis(4-methoxy-3,5-dimethylphenyl)]- (9CI) (CA INDEX NAME)



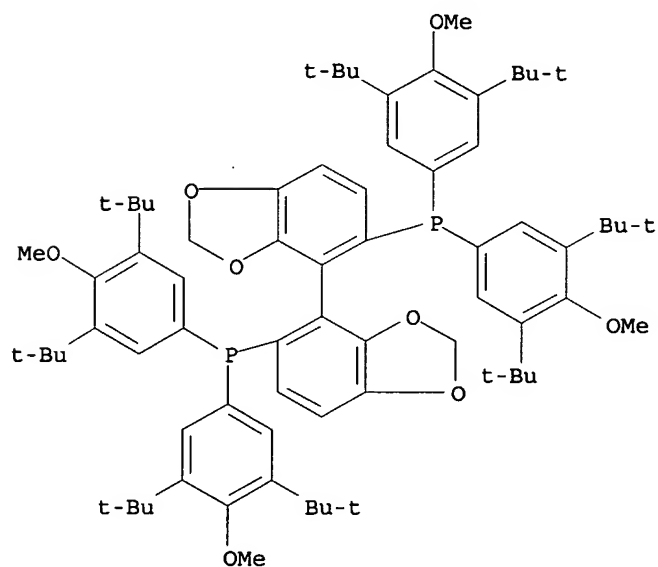
RN 210169-39-4 HCAPLUS

CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl)]-, (+)- (9CI) (CA INDEX NAME)



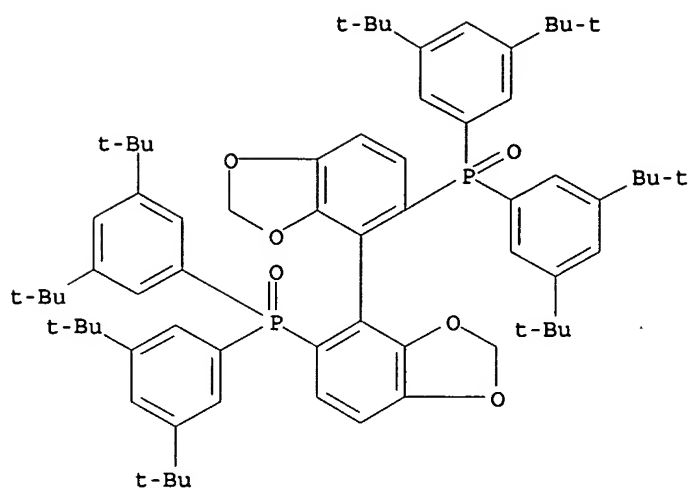
RN 210169-40-7 HCAPLUS

CN Phosphine, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]-(9CI) (CA INDEX NAME)



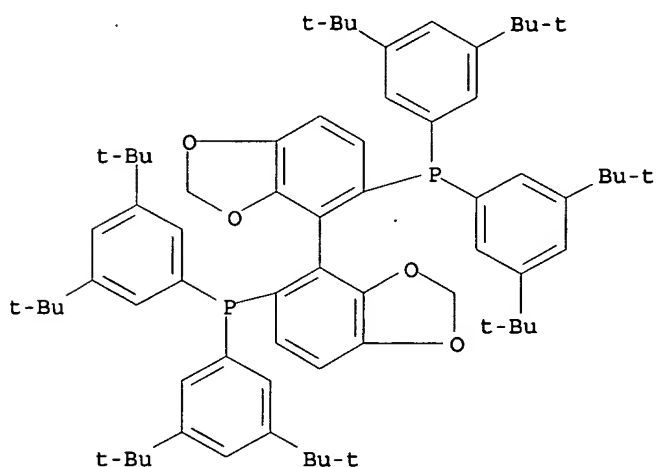
RN 210169-41-8 HCAPLUS

CN Phosphine oxide, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[bis[3,5-bis(1,1-dimethylethyl)phenyl]-(9CI) (CA INDEX NAME)



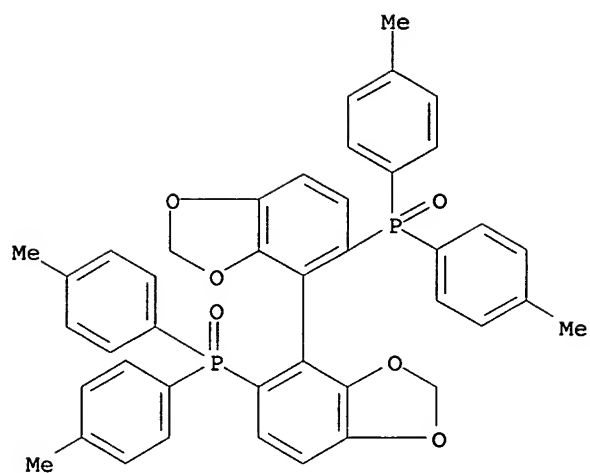
RN 210169-42-9 HCAPLUS

CN Phosphine, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-bis(1,1-dimethylethyl)phenyl)-, (+)- (9CI) (CA INDEX NAME)



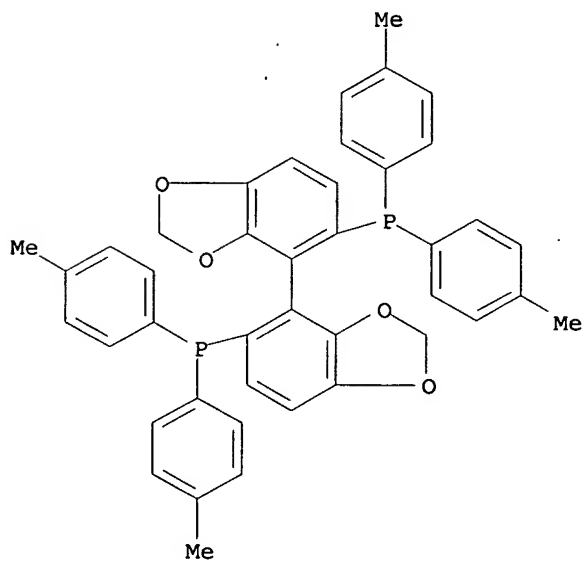
RN 210169-43-0 HCAPLUS

CN Phosphine oxide, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



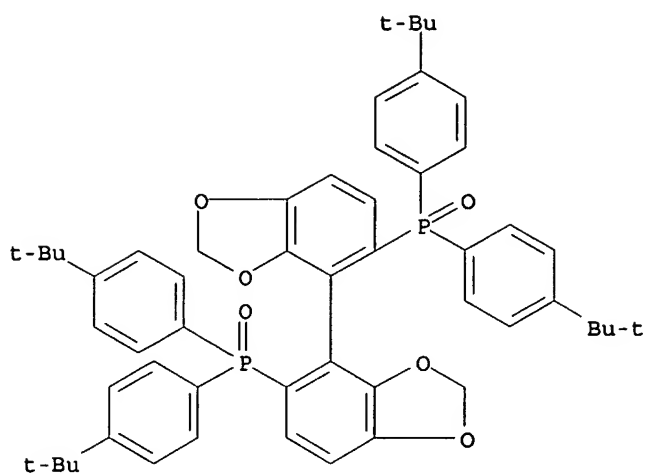
RN 210169-44-1 HCAPLUS

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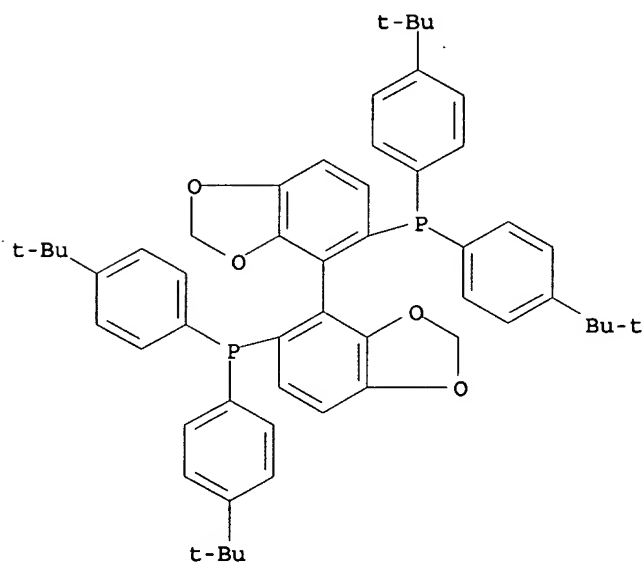


RN 210169-45-2 HCAPLUS

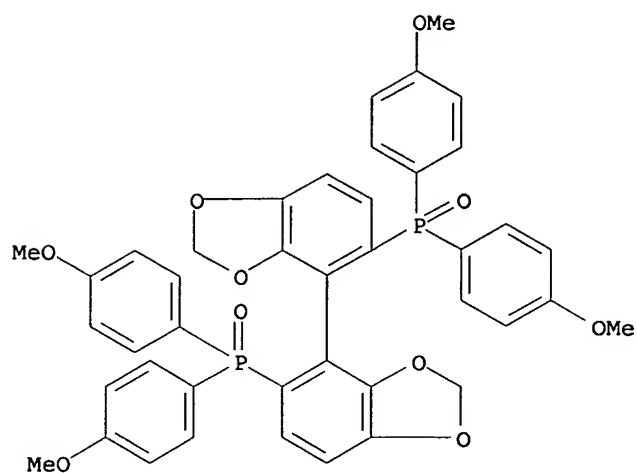
CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-(1,1-dimethylethyl)phenyl)-, (+)- (9CI) (CA INDEX NAME)]



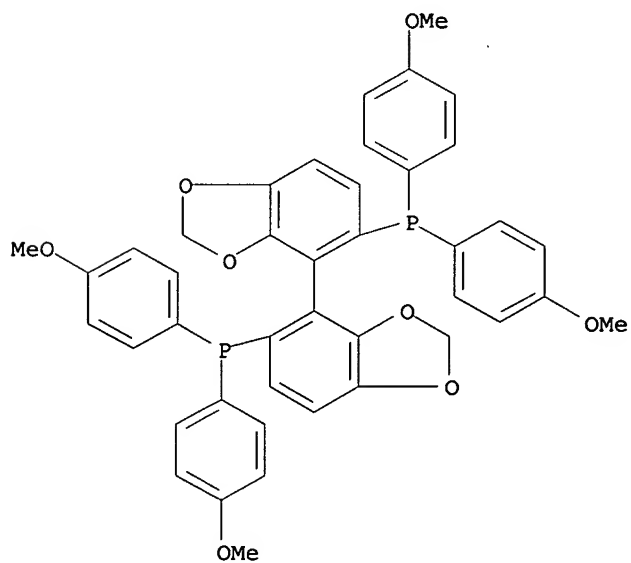
RN 210169-46-3 HCAPLUS
 CN Phosphine, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-(1,1-dimethylethyl)phenyl)-, (+)- (9CI) (CA INDEX NAME)]



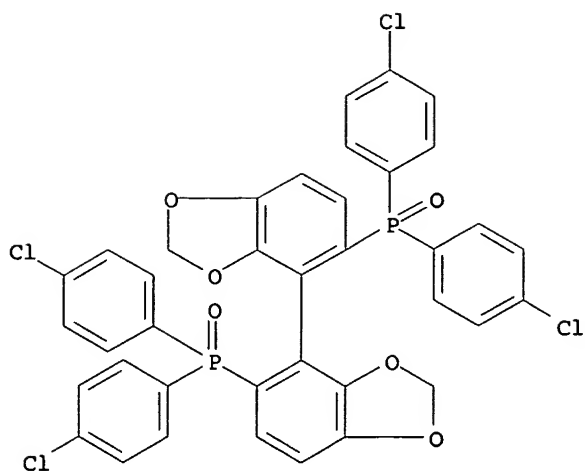
RN 210169-47-4 HCAPLUS
 CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-methoxyphenyl)-, (+)- (9CI) (CA INDEX NAME)]



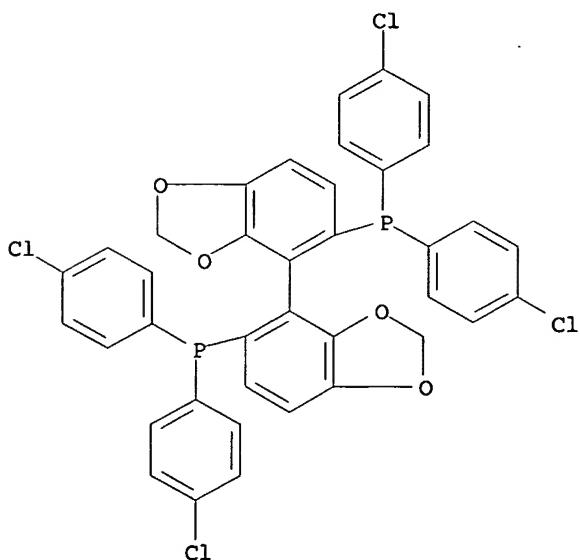
RN 210169-48-5 HCAPLUS
 CN Phosphine, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[bis(4-methoxyphenyl)]- (9CI) (CA INDEX NAME)



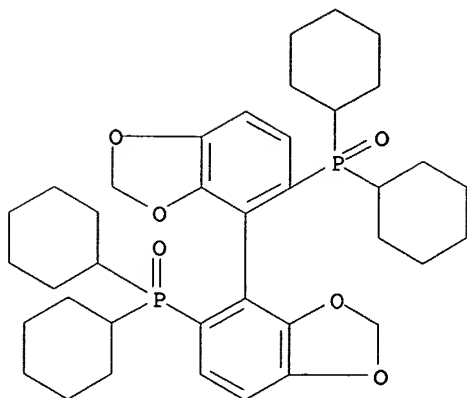
RN 210169-49-6 HCAPLUS
 CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-chlorophenyl)]-, (+)- (9CI) (CA INDEX NAME)



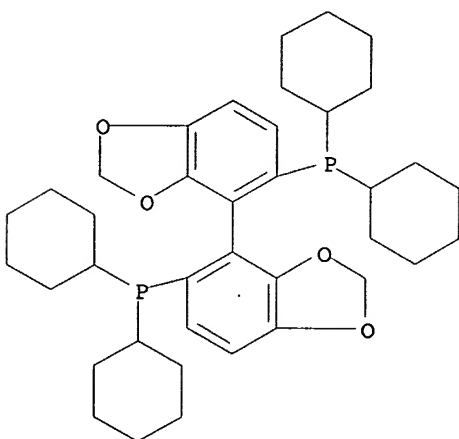
RN 210169-50-9 HCAPLUS
 CN Phosphine, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-chlorophenyl)-, (+)- (9CI) (CA INDEX NAME)]



RN 210169-51-0 HCAPLUS
 CN Phosphine oxide, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[dicyclohexyl- (9CI) (CA INDEX NAME)]

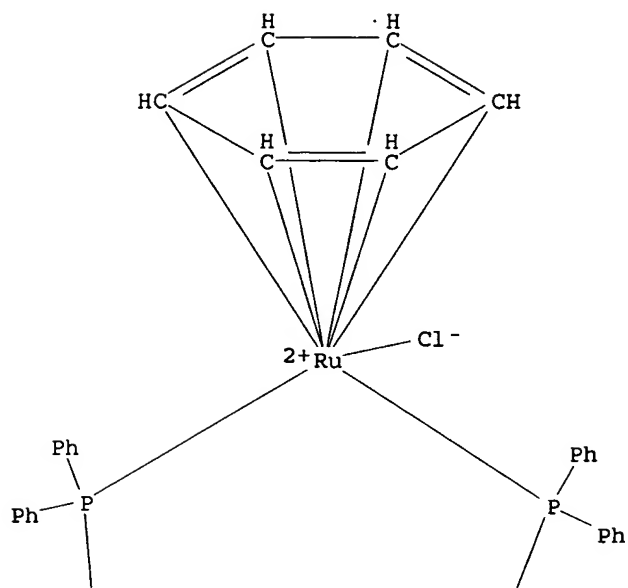


RN 210169-52-1 HCAPLUS
 CN Phosphine, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[dicyclohexyl-,
 (+)- (9CI) (CA INDEX NAME)

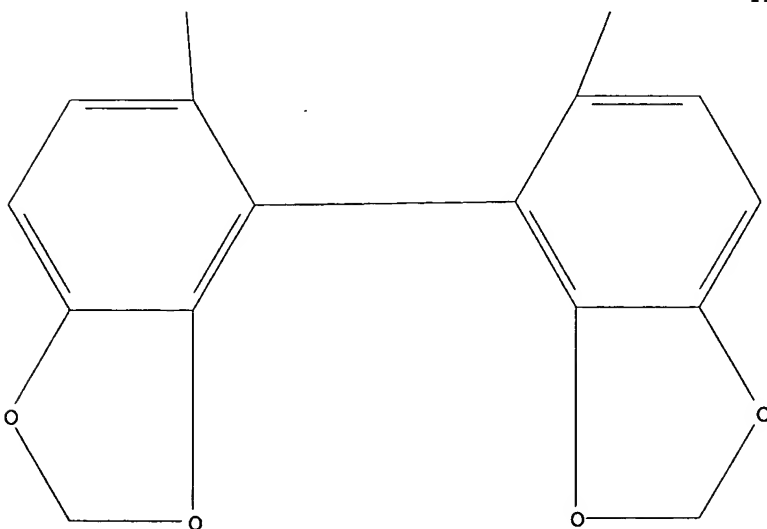


IT 210174-68-8P 210174-69-9P 210174-71-3P
 210174-72-4P
 RL: CAT (Catalyst use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (prepn. of chiral bis(methylenedioxy)
 biphenyldiylphosphine and their transition
 metal complexes as ligands and asym.
 hydrogenation catalysts)
 RN 210174-68-8 HCAPLUS
 CN Ruthenium(1+), (η^6 -benzene)[(4S)-4,4'-bi-1,3-benzodioxole-5,5'-
 diylbis[diphenylphosphine- κ P]]chloro-, chloride (9CI) (CA
 INDEX NAME)

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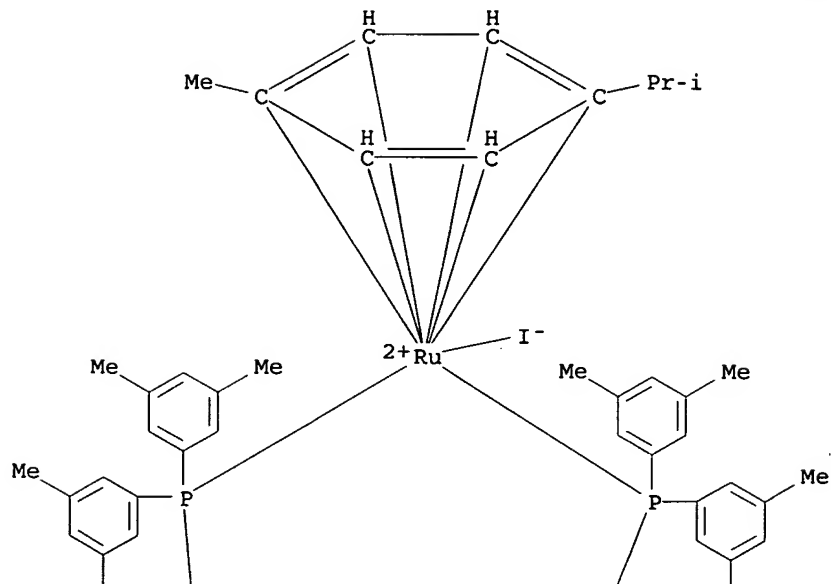


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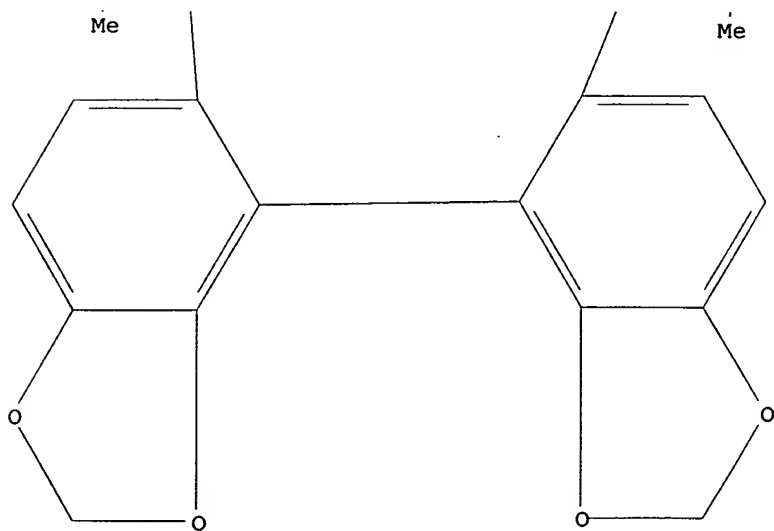


RN 210174-69-9 HCAPLUS
 CN Ruthenium(1+), [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-dimethylphenyl)phosphine-κP]]iodo[(1,2,3,4,5,6-η)-1-methyl-4-(1-methylethyl)benzene]-, iodide (9CI) (CA INDEX NAME)

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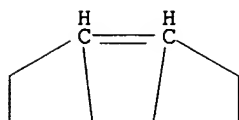


RN 210174-71-3 HCAPLUS
 CN Rhodium(1+), [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-dimethylphenyl)phosphine-κP]] [(1,2,5,6-η)-1,5-cyclooctadiene]-, perchlorate (9CI) (CA INDEX NAME)

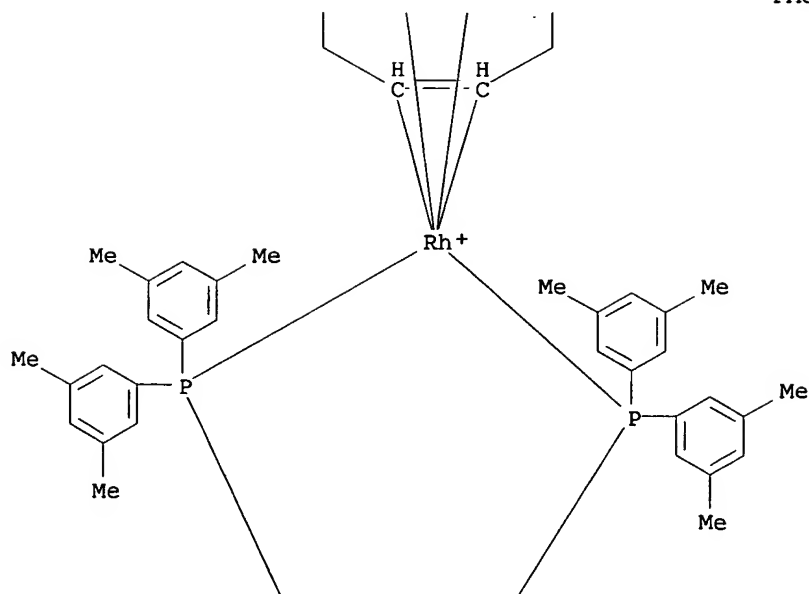
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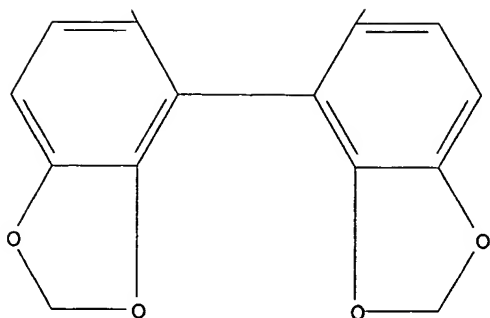
PAGE 1-A



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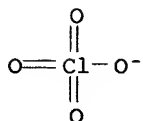
PAGE 3-A



CM 2

CRN 14797-73-0

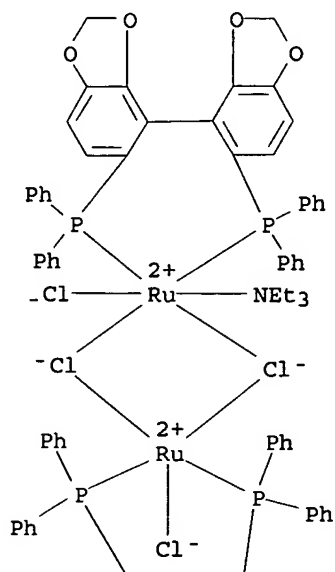
CMF Cl O4



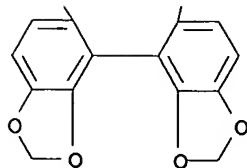
RN 210174-72-4 HCAPLUS

CN Ruthenium, bis[(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-
diylbis[diphenylphosphine-κP]]di-μ-chlorodichloro(N,N-
diethylethanamine)di-, stereoisomer (9CI) (CA INDEX NAME)

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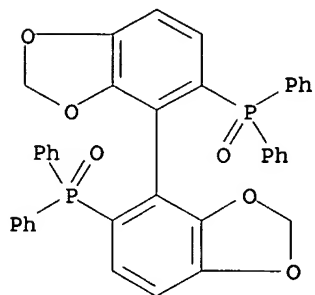
IT 210169-53-2P 210169-55-4P

RL: PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

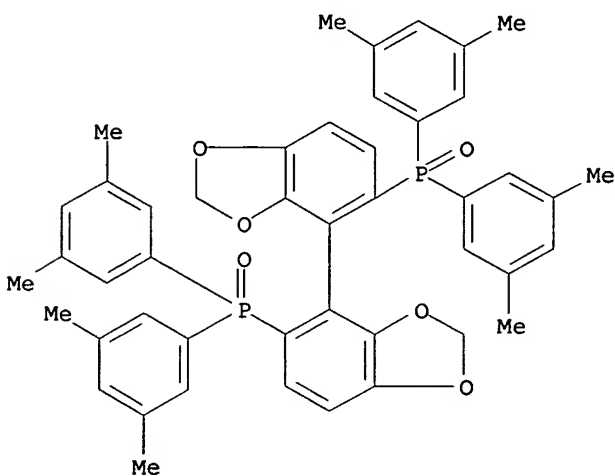
RN 210169-53-2 HCAPLUS

CN Phosphine oxide, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)]



RN 210169-55-4 HCAPLUS

CN Phosphine oxide, [(4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diyl]bis[bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)]

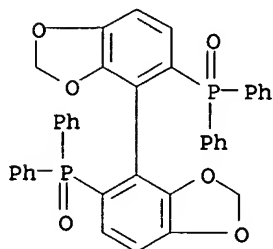


IT 209981-68-0P 209981-71-5P 209981-72-6P
209981-73-7P 209981-74-8P 209981-75-9P
209981-76-0P 209981-77-1P 209981-78-2P
209981-79-3P 210169-54-3P 210169-57-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

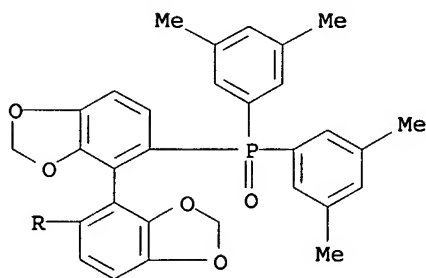
RN 209981-68-0 HCAPLUS

CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[diphenyl-
(9CI) (CA INDEX NAME)



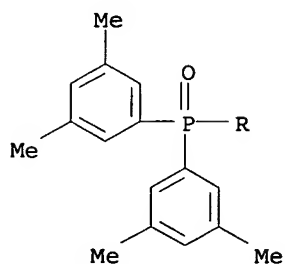
RN 209981-71-5 HCAPLUS

CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-
dimethylphenyl)- (9CI) (CA INDEX NAME)



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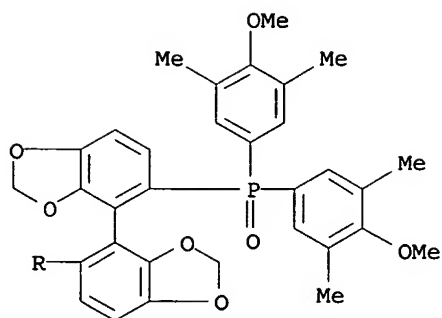
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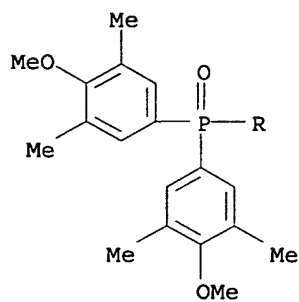
RN 209981-72-6 HCAPLUS

CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-
methoxy-3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

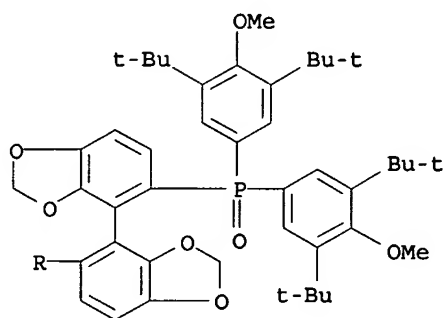


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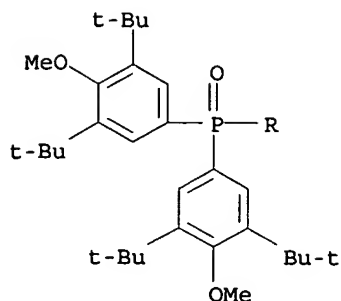


RN 209981-73-7 HCAPLUS
 CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl)]- (9CI) (CA INDEX NAME)

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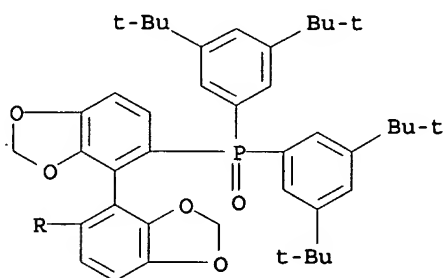


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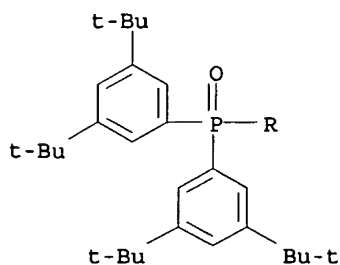


RN 209981-74-8 HCAPLUS
 CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-bis(1,1-dimethylethyl)phenyl)]- (9CI) (CA INDEX NAME)

PAGE 1-A

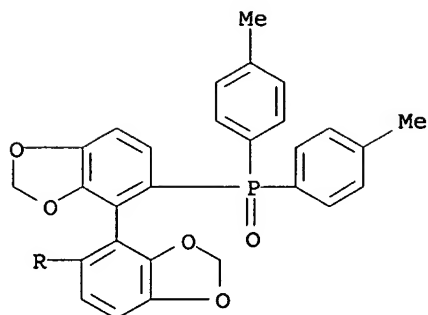


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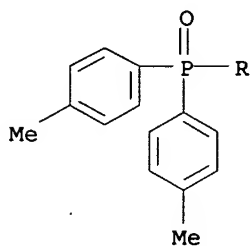


RN 209981-75-9 HCAPLUS
 CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-methylphenyl)]- (9CI) (CA INDEX NAME)

PAGE 1-A

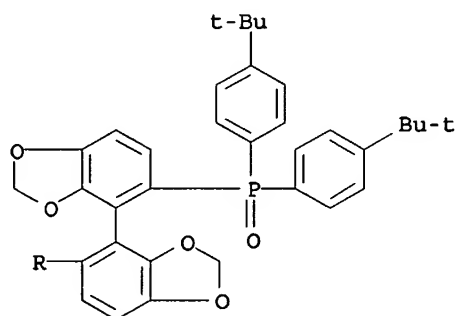


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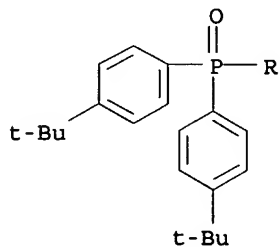


RN 209981-76-0 HCAPLUS
CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

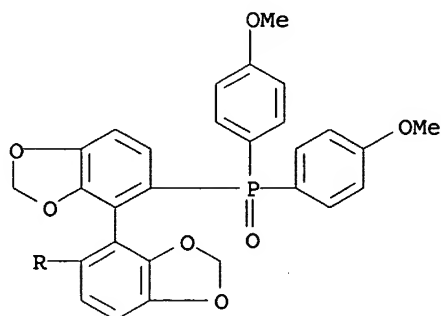


PAGE 2-A

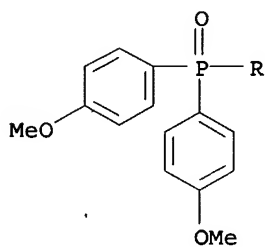


RN 209981-77-1 HCAPLUS
CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(4-methoxyphenyl)- (9CI) (CA INDEX NAME)]

PAGE 1-A

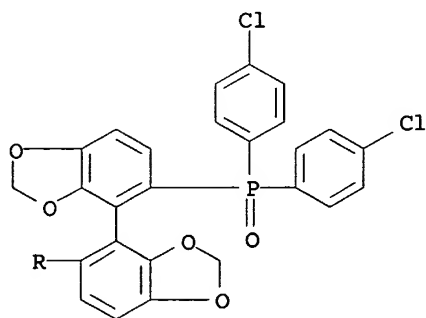


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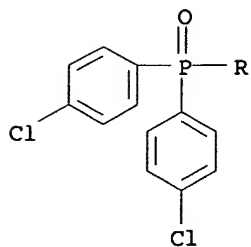


RN 209981-78-2 HCAPLUS
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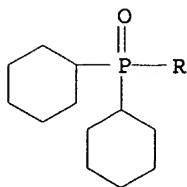
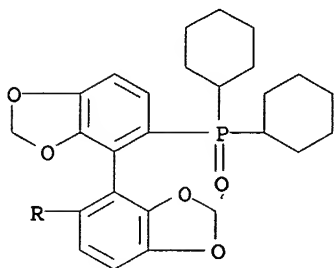
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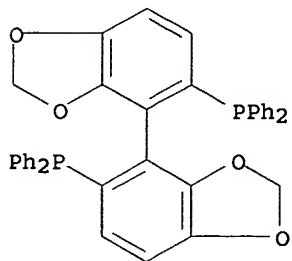
PAGE 2-A



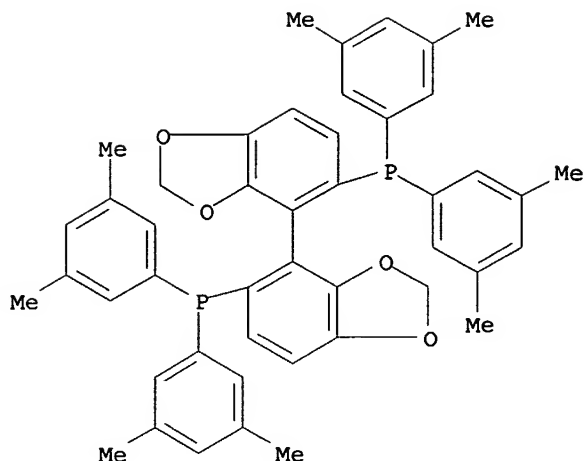
RN 209981-79-3 HCAPLUS
 CN Phosphine oxide, [4,4'-bi-1,3-benzodioxole]-5,5'-
 diylbis[dicyclohexyl- (9CI) (CA INDEX NAME)]



RN 210169-54-3 HCAPLUS
 CN Phosphine, (4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[diphenyl-
 (9CI) (CA INDEX NAME)]



RN 210169-57-6 HCAPLUS
 CN Phosphine, (4S)-[4,4'-bi-1,3-benzodioxole]-5,5'-diylbis[bis(3,5-
 dimethylphenyl)- (9CI) (CA INDEX NAME)]



- IC ICM C07F009-655
ICS C07F015-00; B01J031-28
- ICA C07M007-00
- CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 29, 67, 78
- ST **methylenedioxybiphenyldiphenylphosphine prepn**
ligand asym hydrogenation catalyst; phenylphosphine
methylenedioxy biphenyl asym hydrogenation catalyst; ruthenium
phosphine complex catalyst; rhodium phosphine
complex catalyst; ketone asym hydrogenation; transition
metal biphenylylphosphine complex
- IT Asymmetric **synthesis** and induction
(**prepn. of chiral bis(methylenedioxy)**
biphenyldiylphosphine and their **transition**
metal complexes as ligands and **asym.**
hydrogenation catalysts)
- IT **Transition metal complexes**
RL: CAT (Catalyst use); USES (Uses)
(**prepn. of chiral bis(methylenedioxy)**
biphenyldiylphosphine and their **transition**
metal complexes as ligands and **asym.**
hydrogenation catalysts)
- IT **Alcohols, preparation**
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
(Preparation)
(**prepn. of chiral bis(methylenedioxy)**
biphenyldiylphosphine and their **transition**
metal complexes as ligands and **asym.**
hydrogenation catalysts)
- IT **Ketones, reactions**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**prepn. of chiral bis(methylenedioxy)**
biphenyldiylphosphine and their **transition**
metal complexes as ligands and **asym.**
hydrogenation catalysts)
- IT **Hydrogenation**
Hydrogenation catalysts
(**stereoselective; prepn. of chiral bis(methylenedioxy)**
biphenyldiylphosphine and their **transition**
metal complexes as ligands and **asym.**
hydrogenation catalysts)
- IT 210169-37-2P 210169-38-3P 210169-39-4P
210169-40-7P 210169-41-8P 210169-42-9P
210169-43-0P 210169-44-1P 210169-45-2P
210169-46-3P 210169-47-4P 210169-48-5P

210169-49-6P 210169-50-9P 210169-51-0P

210169-52-1P

RL: CAT (Catalyst use); PUR (Purification or recovery);

SPN (Synthetic preparation); PREP (Preparation); USES

(Uses)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

IT 210174-68-8P 210174-69-9P 210174-71-3P

210174-72-4P

RL: CAT (Catalyst use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

IT 210169-53-2P 210169-55-4P

RL: PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic
preparation); PREP (Preparation); RACT (Reactant or
reagent)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

IT 116-09-6 1499-21-4, Diphenylphosphinyl chloride 2635-13-4,
4-Bromo-1,2-methylenedioxybenzene 2743-38-6, Dibenzoyl-L-tartaric
acid 20445-33-4 59420-05-2 90614-07-6 129994-60-1
137219-83-1

RL: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

IT 209981-66-8P 209981-67-9P 209981-68-0P 209981-69-1P

209981-70-4P 209981-71-5P 209981-72-6P

209981-73-7P 209981-74-8P 209981-75-9P

209981-76-0P 209981-77-1P 209981-78-2P

209981-79-3P 210169-54-3P 210169-57-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

IT 57-55-6P, 1,2-Propanediol, preparation 142248-11-1P

RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of chiral bis(methylenedioxy)
biphenyldiylphosphine and their transition
metal complexes as ligands and asym.
hydrogenation catalysts)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L26 ANSWER 50 OF 62 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:304138 HCAPLUS

DOCUMENT NUMBER: 129:16234

TITLE: Preparation of optically active binaphthyl and
octahydrobinaphthyl bis(phosphine) ligands

INVENTOR(S): Zhang, Xiaoyaong; Sayo, Noboru

PATENT ASSIGNEE(S): Takasago International Corp., Japan

SOURCE: Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

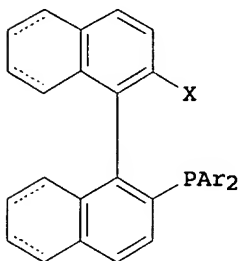
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 839819	A1	19980506	EP 1997-402528	199710 24
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EP 839819	B1	20030917		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10120692	A2	19980512	JP 1996-282157	199610 24
<--				
JP 3445451	B2	20030908		
US 5922918	A	19990713	US 1997-957020	199710 24
<--				
PRIORITY APPLN. INFO.:			JP 1996-282157	A 199610 24

OTHER SOURCE(S): CASREACT 129:16234; MARPAT 129:16234
GI



AB Compd. I (X = PAR₂), ligand of a catalyst complex useful for asym. syntheses, was prepd. in an economical way by reacting compd. I (X = OTf) with phosphine oxides Ar₂P(O)H in the presence of a transition metal/phosphine complex. In I, the double line consisting of a continuous line and a dotted line signifies either a double bond or a single bond, resp. forming part of a naphthalene ring or an octahydronaphthalene ring depending on whether the naphthalene ring was subjected to the redn. or not; Tf represents a trifluoromethanesulfonyl group; and Ar represents a Ph group, a substituted Ph group (bearing 1 to 3 substituents which may be the same or different and are selected from the group consisting of halogen atoms, lower alkyl group, lower alkoxy group and halogenated lower alkyl group) or a naphthyl group which may bear a lower alkyl or lower alkoxy substituent. For example, (S)-2,2'-bis(trifluoromethanesulfonyloxy)-1,1'-binaphthyl was reacted with bis(2-naphthyl)phosphine oxide in the presence of Pd(OAc)₂, Ph₂P(CH₂)₃PPh₂, NaO₂CH and iPr₂EtN in DMSO to give 75% (S)-2-bis(2-naphthyl)phosphinyl-2'-(trifluoromethanesulfonyloxy)-1,1'-binaphthyl (1). 1 Was reduced to the phosphino analog (2) using Cl₃SiH and dimethylaniline in toluene in 84% yield. 2 Was substituted with bis(2-naphthyl)phosphine oxide in DMF in the presence of Ni(dppe)Cl₂ and DABCO to give 56%

(S)-2-bis(2-naphthyl)phosphino-2'-bis(2-naphthyl)phosphinyl-1,1'-binaphthyl (3). 3 Was reduced similarly to 1 to give (S)-2,2'-bis(bis(2-naphthyl)phosphino)-1,1'-binaphthyl in 87% yield.

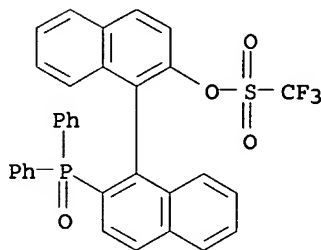
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RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(intermediate for prepn. of optically active bis(phosphine))

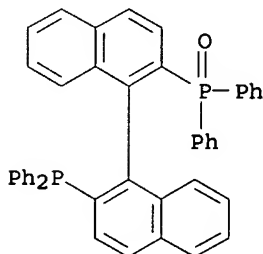
RN 132532-04-8 HCAPLUS

CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphinyl)[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



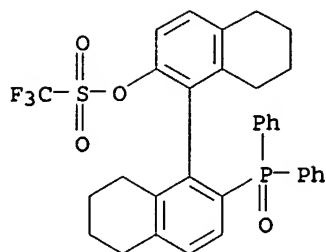
RN 152646-80-5 HCAPLUS

CN Phosphine oxide, [(1R)-2'-(diphenylphosphino)[1,1'-binaphthalen]-2-yl]diphenyl- (9CI) (CA INDEX NAME)

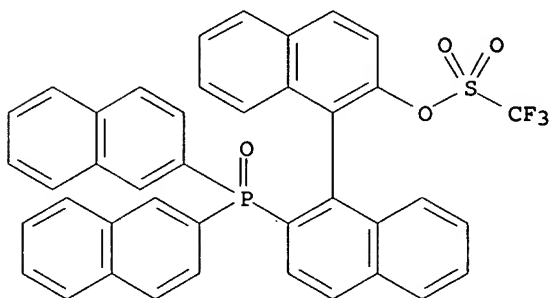


RN 159496-90-9 HCAPLUS

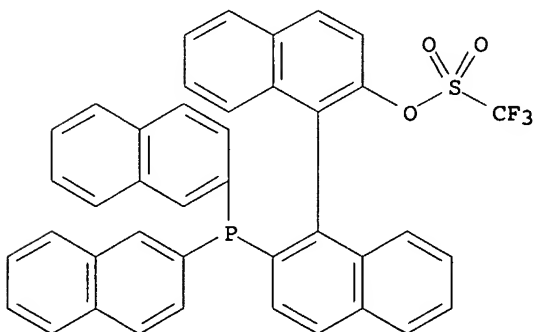
CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphinyl)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



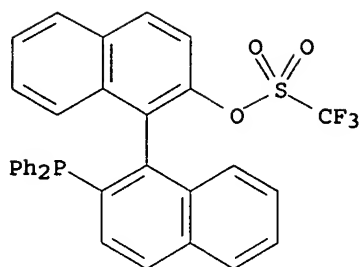
RN 187741-54-4 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-(di-2-naphthalenylphosphinyl) [1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



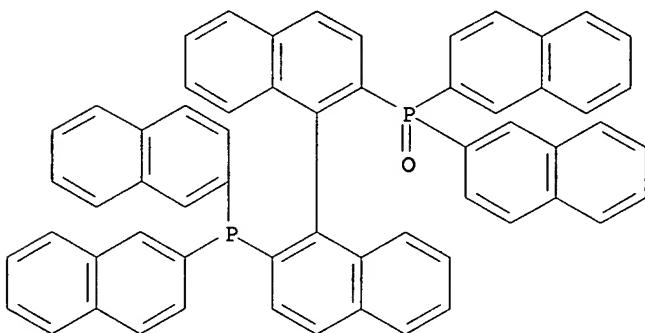
RN 187742-38-7 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1S)-2'-(di-2-naphthalenylphosphino) [1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



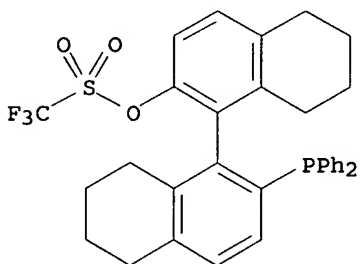
RN 187742-81-0 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphino) [1,1'-binaphthalen]-2-yl (9CI) (CA INDEX NAME)



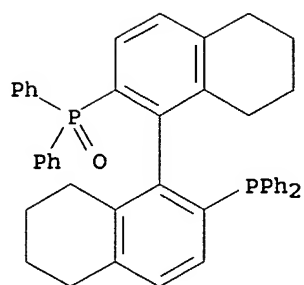
RN 190896-71-0 HCAPLUS
 CN Phosphine oxide, [(1S)-2'-(di-2-naphthalenylphosphino)[1,1'-binaphthalen]-2-yl]di-2-naphthalenyl- (9CI) (CA INDEX NAME)



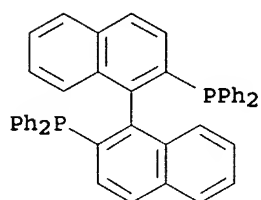
RN 207683-39-4 HCAPLUS
 CN Methanesulfonic acid, trifluoro-, (1R)-2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl ester (9CI) (CA INDEX NAME)



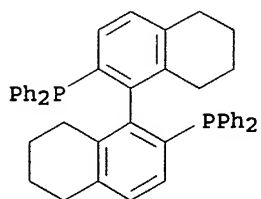
RN 207683-40-7 HCAPLUS
 CN Phosphine oxide, [(1R)-2'-(diphenylphosphino)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalen]-2-yl]diphenyl- (9CI) (CA INDEX NAME)



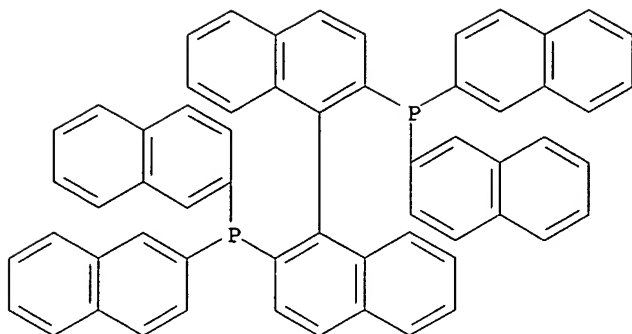
IT 76189-55-4P, (R)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl
 139139-86-9P, (R)-2,2'-Bis(diphenylphosphino)-
 5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl 190896-72-1P
 , (S)-2,2'-Bis(bis(2-naphthyl)phosphino)-1,1'-binaphthyl
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of)
 RN 76189-55-4 HCAPLUS
 CN Phosphine, (1R)-[1,1'-binaphthalene]-2,2'-diylbis[diphenyl- (9CI)
 (CA INDEX NAME)



RN 139139-86-9 HCAPLUS
 CN Phosphine, [(1R)-5,5',6,6',7,7',8,8'-octahydro[1,1'-binaphthalene]-
 2,2'-diyl]bis[diphenyl- (9CI) (CA INDEX NAME)



RN 190896-72-1 HCAPLUS
 CN Phosphine, (1S)-[1,1'-binaphthalene]-2,2'-diylbis[di-2-naphthalenyl-
 (9CI) (CA INDEX NAME)



IC ICM C07F009-50
ICS C07F009-53
ICI C07M007-00
CC 29-7 (Organometallic and Organometalloidal Compounds)
IT 6737-42-4, 1,3-Bis(diphenylphosphino)propane 7688-25-7,
1,4-Bis(diphenylphosphino)butane
RL: CAT (Catalyst use); USES (Uses)
(catalyst component; for prepn. of optically active
bis(phosphine))
IT 14647-23-5, (1,2-Bis(diphenylphosphino)ethane)dichloronickel
RL: CAT (Catalyst use); USES (Uses)
(catalyst; for prepn. of optically active bis(phosphine))
IT 65355-14-8P, (R)-2,2'-Dihydroxy-5,5',6,6',7,7',8,8'-octahydro-1,1'-
binaphthyl 128544-05-8P, (S)-2,2'-Bis(trifluoromethanesulfonyloxy)-
1,1'-binaphthyl 132532-04-8P, (R)-2-Diphenylphosphinyl-2'-
trifluoromethanesulfonyloxy-1,1'-binaphthyl 152646-80-5P,
(R)-2-Diphenylphosphino-2'-diphenylphosphinyl-1,1'-binaphthyl
159496-89-6P, (R)-2,2'-Bis(trifluoromethanesulfonyloxy)-
5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl 159496-90-9P
, (R)-2-Diphenylphosphinyl-2'-trifluoromethanesulfonyloxy-
5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl 187741-54-4P
, (S)-2-(Bis(2-naphthyl)phosphinyl)-2'-trifluoromethanesulfonyloxy-
1,1'-binaphthyl 187742-38-7P, (S)-2-(Bis(2-
naphthyl)phosphino)-2'-trifluoromethanesulfonyloxy-1,1'-binaphthyl
187742-81-0P, (R)-2-Diphenylphosphino-2'-
trifluoromethanesulfonyloxy-1,1'-binaphthyl 190896-71-0P,
(S)-2-(Bis(2-naphthyl)phosphino)-2'-(bis(2-naphthyl)phosphinyl)-1,1'-
binaphthyl 207683-39-4P, (R)-2-Diphenylphosphino-2'-
trifluoromethanesulfonyloxy-5,5',6,6',7,7',8,8'-octahydro-1,1'-
binaphthyl 207683-40-7P, (R)-2-Diphenylphosphino-2'-
diphenylphosphinyl-5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl
RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(intermediate for prepn. of optically active bis(phosphine))
IT 76189-55-4P, (R)-2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl
139139-86-9P, (R)-2,2'-Bis(diphenylphosphino)-
5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl 190896-72-1P
, (S)-2,2'-Bis(bis(2-naphthyl)phosphino)-1,1'-binaphthyl
207683-41-8P, (S)-2,2'-Bis(trifluoromethanesulfonyloxy)-
5,5',6,6',7,7',8,8'-octahydro-1,1'-binaphthyl
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

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